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Colorado State Office
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APR 25 1980

NOTICE OF PUBLIC HEARINGS

Public hearings will be held on the Draft Powderhorn Wilderness Environmental Impact Statement. The purpose of the hearings will be to receive oral and written testimony on the adequacy of the draft EIS and the Secretary of the Interior's proposed recommendation to the President on the suitablility of the area for preservation as wilderness (required by PL 88-577, Section 3(d)(1)(B)). The public meetings will be held at the following places and dates:

Tuesday, May 27, 1980 at the Redskin Inn in
Montrose, Colorado

Wednesday, May 28, 1980 at Webster Hall in

ID 88005468

United States Department of the Interior

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NOTICE

Enclosed for your review and comment is the draft environmental impact statement for the proposed Powderhorn Wilderness.

The statement is based on information from Bureau of Land Management and other sources, including information supplied by and in consultation with Federal, State, and local agencies, and interested private organizations and individuals. The purpose of the statement is to disclose in advance the probable environmental impacts of the proposed action and alternatives and to assure that the decision-making process considers environmental as well as economic, technical, and other factors.

We would appreciate receiving your comments on the adequacy, completeness, and accuracy of this analysis. The comment period will run for 60 days after the draft is filed with the Environmental Protection Agency and the notice of receipt is published in the Federal Register. Comments received after the 60-day review period will be considered in the subsequent decision-making process, even though they may arrive too late for inclusion in the final environmental impact statement.

Your comments should be sent to:

Henri Bisson
Bureau of Land Management
P.O. Box 1269
Montrose, Colorado 81401

Charles W. Luscher
Acting State Director

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DRAFT

ENVIRONMENTAL IMPACT STATEMENT

PROPOSED WILDERNESS DESIGNATION OF THE POWDERHORN INSTANT STUDY AREA AND CONTIGUOUS AREAS WITH WILDERNESS CHARACTER

MONTROSE DISTRICT, COLORADO

Prepared by

Bureau of Land Management
Department of the Interior

Charles W. Luscher

Acting State Director
Colorado State Office

Abstract: This environmental impact statement considers a proposed action and three alternatives concerning wilderness designation for the Powderhorn Primitive Area (40,480 acres) and contiguous areas (9,660 acres) in southwestern Colorado. The proposed action and alternatives analyze and compare various acreages for designation or non-designation as wilderness.

For Further Information Contact:	Comments Must Be Received By:
Henri Bisson Project Manager Bureau of Land Management P. O. Box 1269 Montrose, Colorado 81401 Tel: 303-249-7791	July 1,1980

TABLE OF CONTENTS

SUMMARY v

CHAPTER 1 -- PURPOSE AND NEED 1

CHAPTER 2 -- ALTERNATIVES INCLUDING THE PROPOSED ACTION 7

- Proposed Action--Designation of the Powderhorn Primitive Area and 4,471 Contiguous Acres 7
- Designation of the Powderhorn Primitive Area 10
- Use Alternative--Maximum Development, Production, and Use of All Resources 11
- No Action. 12
- Designation of All Lands With Wilderness Character 12
- Interrelationships 13
- Impact Summary 14

CHAPTER 3 -- AFFECTED ENVIRONMENT 17

- Climate and Air Quality 17
- Geology and Minerals 22
- Soils. 25
- Water Resources. 27
- Vegetation 30
- Terrestrial Wildlife 33
- Aquatic Wildlife 34
- Livestock Grazing. 37
- Cultural Resources 39
- Visual Resources 43
- Forestry Resources 46
- Recreation 54
- Economics 61
- Social Conditions 62

CHAPTER 4 -- ENVIRONMENTAL CONSEQUENCES 63

- Impact Analysis Guidelines 63
- Energy Requirements and Conservation Potential 64
- Impacts of the Proposed Action 65
- Impacts of Designation of the Powderhorn Primitive Area 77
- Impacts of the Use Alternative 79
- Impacts of No Action 80
- Impacts of Designation of all Lands With Wilderness Character 82

SUPPORT DATA 89

List of Preparers 91
List of Agencies, Organizations, and Persons to Whom Copies of the Statement Were Sent 92
Index 94
Glossary 97
Appendicies
S-1 General Soil Properties 99
RE-1 Wilderness Intensive Inventory 100
SE-1 Economics--Derivation of Recreation Values 110
References 112

LIST OF MAPS AND ILLUSTRATIONS

Map 1--General area, alternative boundaries, private inholdings 2
Map 2--Geologic map 23
Map 3--Soils map 26
Figure 3-1--Photo of hummocky soil due to heavy use 28
Map 4--Vegetation types 31
Map 5--Allotment boundaries 38
Map 6--Visual Resource Management Classifications 48
Map 7--Timber Classifications 53
Map 8--General area and recreation sites (map pocket inside back cover)

SUMMARY

The Bureau of Land Management proposes to recommend to Congress that 44,951 acres of the Montrose District in southwestern Colorado be included in the National Wilderness Preservation System. The Powderhorn Instant Study Area (ISA) and contiguous lands with wilderness values encompass 50,140 acres total; 40,480 acres in the existing Powderhorn Primitive Area (the ISA) and 9,660 acres of contiguous lands. Four alternatives and the proposed action were considered: (1) Designation of the 40,480 acre Primitive Area and 4,471 Contiguous Acres (Proposed Action); (2) Designation of the Existing Primitive Area (40,480 acres); (3) Use Alternative; (4) No Action; and (5) Designation of All Lands With Wilderness Character.

1. Designation of the Primitive Area and 4,471 Contiguous Acres. This alternative would include 44,880 acres.

This alternative would not affect the 40,480 acres presently within the primitive area, since it is now being managed under wilderness guidelines. The contiguous 4,471 acres are potentially manageable under multiple use concepts; therefore, their designation as wilderness would result in resource trade-offs. Some resource values would be foregone in order to preserve others.

The 4,471 contiguous acres contain 6 million board feet (MMBF) of merchantable timber, that could be harvested at a sustained yield rate of 50 thousand board feet (MBF) per year, worth $2,000 stumpage value (1979 dollars).

Visitor use in the area would increase from 2,155 visitor days (1978) to 3,365 in the short term (1985) and 7,247 in the long term (1995). These visitor days would have an annual value of $62,150 in the short term and $133,860 in the long term.

This alternative would include 320 acres of private land within the wilderness boundaries.

2. Designation of the Existing Primitive Area. This alternative would include 40,480 acres.

This alternative would essentially be a continuation of present conditions, since the area has been managed as a primitive area (under wilderness guidelines) since September, 1973. Therefore, there would be few impacts on the existing environment.

Visitor use in the area would increase from 2,155 visitor days (1978) to 3,365 in the short term and 7,247 in the long term. These visitor days would have a value of $62,150 in the short term and $133,860 in the long term.

This alternative would include 280 acres of private land within the wilderness boundaries.

3. Use Alternative--Maximum Development, Production, and Use of All Resources. Under this alternative, no acreage would be managed as wilderness.

This alternative could affect the existing primitive area (40,480 acres) and the entire 9,660 contiguous acres with wilderness character. Existing land use withdrawals and restrictions would have to be reviewed. If, through the BLM planning system, the area was designated for other multiple uses, impacts could occur to the wilderness resources as well as most other resources. Such impacts would be analyzed at the time these development plans would be made.

The area contains 64 MMBF of merchantable timber that could be harvested under this alternative at a sustained yield rate of 900 MBF per year, worth $36,000 stumpage value.

Recreation use could continue at the present rate of increasing use; however, the type of recreation could change from wilderness and backcountry recreation to road and ORV type of recreation.

4. No Action. This alternative assumes continuation of present management in the Instant Study Area (40,480 acres).

Impacts under this alternative would be similar to those described for the Designation of the Existing Primitive Area alternative, except that visitor use would be slightly lower since the area would receive less publicity.

5. Designation of All Lands With Wilderness Character. This alternative would include 50,140 acres.

This alternative would not affect the 40,480 acres presently within the primitive area, since it is now being managed under wilderness guidelines. The contiguous 9,660 acres are presently managed under multiple use concepts; therefore, their designation as wilderness would result in resource trade-offs. Some resource values would be foregone in order to preserve other.

The 9,660 contiguous acres contain 12 MMBF of merchantable timber, that could be harvested at a sustained yield rate of 100 MBF per year, worth $4,000 stumpage value.

Visitor use in the area would increase from 2,155 visitor days (1978) to 3,365 in the short term (1985) and 7,247 in the long term (1995). These visitor days would have a value of $62,150 in the short term and $133,860 in the long term.

This alternative would involve 1,240 acres of private land within the wilderness boundaries.

Major Areas of Controversy

Many people of Colorado, and particularly the residents of Hinsdale and Gunnison counties, feel that the state already has enough wilderness areas designated. Conversely, other persons feel that additional wilderness is needed in the state. These diverse opinions are repeatedly expressed at public meetings and in the local news media. Because of the lack of historical use and development of the area, many persons question the need for wilderness protection. However, other persons say that the area needs to be protected against any possible future impacts to wilderness values.

Since only 4 percent of all lands within Hinsdale County are in private ownership, the inclusions of private inholdings within any area of wilderness designation could generate some local controversy.

Conclusion

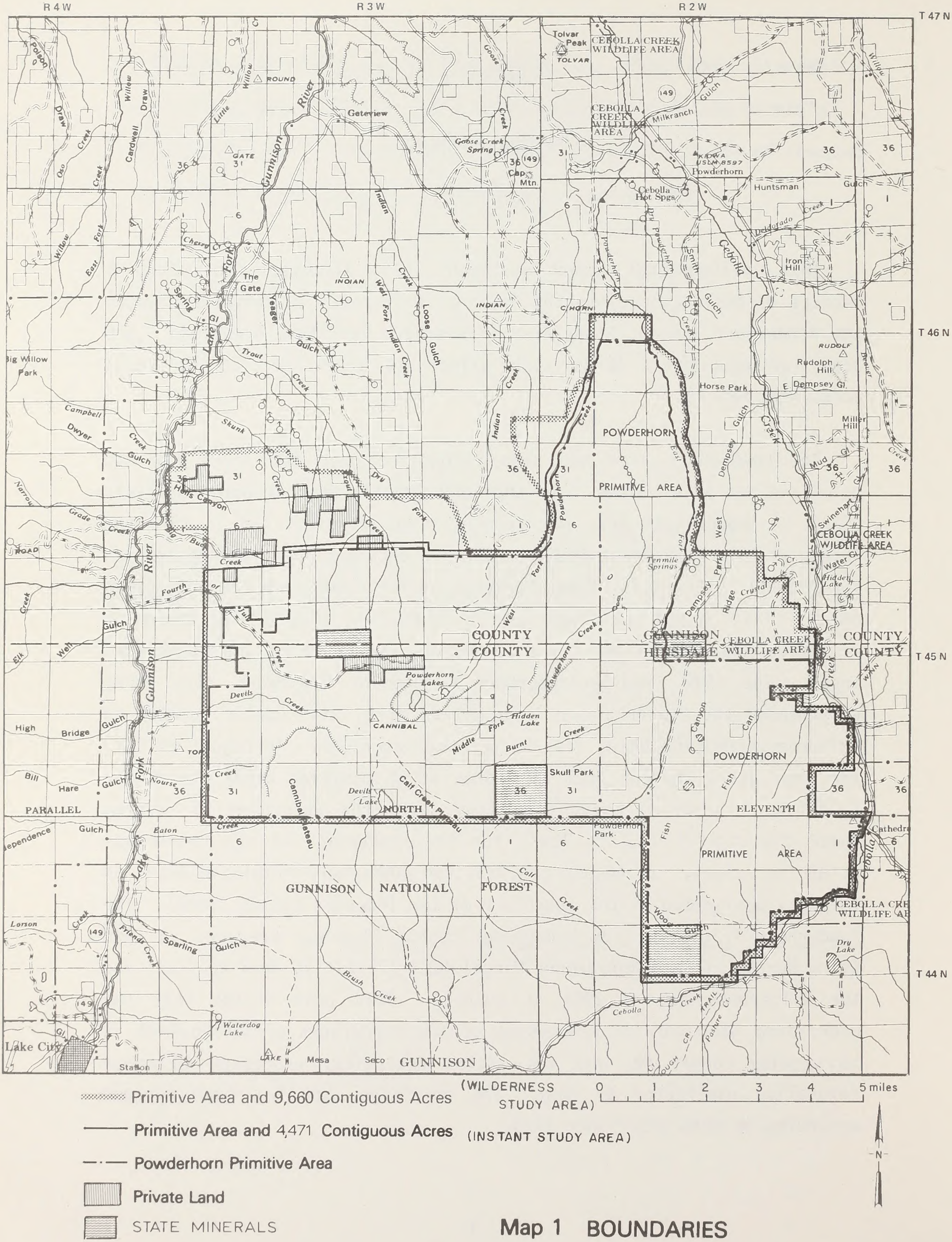
In conclusion, the benefits to all resource values are compared to the adverse impacts to all values for all alternatives. In terms of trade- offs, the first alternative (Designation of the Primitive Area and 4,471 Contiguous Acres) would result in the best balance of resource values foregone for those preserved. Since this alternative was formulated through the BLM planning system, it is the Bureau's proposed action: since it would involve the optimum level of resource trade-offs, it is also the preferred course of action.

CHAPTER 1

PURPOSE AND NEED

This environmental impact statement (EIS) discusses the potential impacts of designation into the National Wilderness Preservation System the Powderhorn Instant Study Area (Powderhorn Primitive Area) and 9,660 acres of contiguous lands with wilderness character (50,140 total acres--see Map 1).

The Powderhorn area has been recognized over the years for its primitive and wild values. In the 1969 Cebolla Unit Resource Analysis (URA) the Powderhorn area was recognized as roadless and in 1970 the Bureau of Land Management (BLM) prepared a document entitled Action Plan for Potential 'Primitive Area' Designation for Powderhorn Lakes Roadless Area. This report outlined and evaluated a proposal recommending primitive area status be given to 40,480 acres within the Powderhorn area. The 1972 Cebolla-Powderhorn Management Framework Plan (MFP) recommended the Powderhorn as a primitive area, with public comment on this recommendation being over 85 percent favorable. In August of 1973 the area was withdrawn from all forms of disposition under the public land laws, including the mining laws, with the exception of leasing under the mineral leasing laws, for the protection of its scenic and primitive values. In August of 1973, the Powderhorn Primitive Area was formally designated by the Secretary of the Interior (38 FR 23427). The Powderhorn Primitive Area Management Master Plan was prepared in 1975 using Bureau of Land Management Manual 6221 (Primitive Area Policy), and the Wilderness Act of 1964 as guides. This plan states that the overriding goal guiding management of the Powderhorn Primitive Area is to provide conditions that will allow ecological processes to occur naturally, unaffected by man. The primitive area has been managed according to this plan since 1975.



Map 1 BOUNDARIES

BLM's Wilderness Program is a result of the Federal Land Policy and Management Act (FLPMA) of 1976 (Public Law 94-579). FLPMA is Congress' basic guidance to the Bureau on how to manage the 470 million acres of public lands under its jurisdiction. One portion of that law (Section 603(a)) directs the Secretary of the Interior and the Bureau of Land Management to inventory public lands to identify those that have wilderness characteristics. Lands with wilderness characteristics must then be studied to determine their suitability or nonsuitability for wilderness. Based on an evaluation of wilderness and other resources use/values in each area determined to contain wilderness characteristics, the Secretary must report his recommendations to the President no later than October 21, 1991, on whether areas should be designated as wilderness. The President must report his final recommendations to Congress within 2 years. Congress will decide if any of these recommended areas are to become wilderness or not. The law also states that wilderness recommendations on all public land areas which were formally designated as natural or primitive areas prior to November 1, 1975, will be reported to the President by July 1, 1980. These areas, including the Powderhorn Primitive Area, are referred to as Instant Study Areas (ISAs).

To accomplish the mandate of section 603 of FLPMA, the Bureau has develped a framework for the wilderness review process which has three phases:

1. Inventory--The inventory phase involves looking at the public lands to determine and locate the existence of areas containing wilderness resoures that meet the criteria established by Congress. Such areas are identified as Wilderness Study Areas.

2. Study--The study phase involves the process of determining, through careful analysis, which Wilderness Study Areas will be recommended as suitable for wilderness designation and which

will be recommended as non-suitable. These determinations, made through the BLM's land use planning system, consider all values,resources, and uses of the public lands.

3. Reporting--The reporting phase consists of actually forwarding or reporting these suitable and non-suitable recommendations through the Secretary of the Interior and the President to Congress. Mineral surveys, environmentalimpact statements, and other data are also submitted with these recommendations.

The inventory phase of the process was completed for the Powderhorn Primitive Area and 9,660 contiguous roadless acres during the summer of 1978 with 50,140 acres found to contain wilderness values and identified as the wilderness study area (WSA) (see Map 1). In determining these wilderness values, the law directs the Bureau to use the criteria given by Congress in the Wilderness Act of 1964. In Section 2(c) of that Act, Congress states that wilderness is essentially an area of undeveloped Federal land in a natural condition, without permanent improvements or human habitation, which has outstanding opportunities for solitude or a primitive and unconfined type of recreation. The area may contain ecological, geological, or other features of scientific, educational, scenic, or historical value (see Appendix RE-1).

A number of major concerns were brought forth at the scoping meetings. Some commenters feel that additional wilderness is necessary in order to protect some parts of the area in their natural state. Others feel that additional wilderness could affect the local economy, since it is dependent to a high degree on motorized recreation and mining. Since a large percentage of land in the area is administered by the federal government, especially in Hinsdale County, some commenters feel that restrictions on use such as wilderness designation could directly affect local businessmen.

Recommendations concerning the Powderhorn area were brought forth during the Gunnison Basin and American Flats/Silverton planning update beginning in the fall of 1978 and continuing into the spring of 1979. Initial public meetings were held in the fall (1978) to identify concerns and issues for the planning effort. In May of 1979, scoping meetings for the Powderhorn wilderness EIS were held in Lake City, Gunnison, Silverton, Montrose, and Denver.

The Management Framework Plan (MFP) Step II for the Gunnison Basin Resource Area was completed during the spring of 1979 with the study phase of the Powderhorn review included in this effort. At this time, the MFP Step II recommendation was that the primitive area (40,480 acres) and 4,471 acres of contiguous land be recommended for inclusion into the wilderness system (see Map 1). The remaining 5,189 acres were not recommended for wilderness due mainly to their unmanageable boundaries and private land inholdings.

The Powderhorn ISA is currently in the reporting phase of the review process as mandated by FLPMA, with this EIS being a required element of the report.

CHAPTER 2

ALTERNATIVES INCLUDING THE PROPOSED ACTION

ALTERNATIVE DESCRIPTIONS

Proposed Action--Designation of the Powderhorn Primitive Area and 4,471 Contiguous Acres--MFP Step II Recommendation

This alternative proposes recommending to Congress the designation as wilderness 44,951 acres of the Powderhorn Primitive Area and contiguous lands which were recommended in the Gunnison Basin MFP Step II. This would include the existing Powderhorn Primitive Area (40,480 acres), Dempsey Park (2,871 acres), Powderhorn creeks confluence (320 acres), and Fourth of July Creek (1,280 acres). These lands contain inholdings amounting to 320 acres of privately owned surface and 1,920 acres of state owned minerals (see Map 1).

Upon designation, these additions to the National Wilderness Preservation System would be managed by BLM according to provisions of the 1964 Wilderness Act and the 1976 Federal Land Policy and Management Act which direct the administering agency be responsible for preserving the wilderness character of the area. Section 4 of the 1964 Wilderness Act, which deals with use in wilderness areas, states that they shall be devoted to the public purposes of recreation, scenic, scientific, educational, conservation, and historical use. Subpart C of this section sets the limits on use.

Prohibition of Certain Uses

> "Except as specifically provided for in this Act (Wilderness Act of 1964), and subject to existing private rights, there shall be no commercial enterprise and no permanent road within any wilderness area designated by this Act and, except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act (including measures required in emergencies involving the health and safety ofpersons within the area), there shall be no temporary road, no useof motor vehicles, motorized equipment or motorboats, no landing ofaircraft, no other form of mechanical transport, and no structure or installation within any such area."

The special provisions allowing specific activities to be permitted are discussed in the next subpart and summarized here. The use of aircraft or motorboats, where these uses have already become established, may be permitted to continue and such measures as may be necessary in the control of fire, insects, and diseases would be allowed. These activities would be subject to the conditions deemed desirable by the managing department head.

Mineral prospecting would be allowed if it could be done in a manner compatible with the preservation of the wilderness environment until 1983. The mining laws and all laws pertaining to mineral leasing in effect before designation would remain in effect, subject, however, to such reasonable regulations governing ingress and egress as prescribed by the Secretary, including where essential the use of mechanized ground or air equipment and restoration as near as possible of the surface of land disturbed during the mining activity.

When it serves the public interests the President may authorize the establishment and maintenance of reservoirs, power projects, transmission lines, roads, and other such facilities.

The grazing of livestock is permitted to continue subject to such reasonable regulations as are deemed necessary by the Secretary.

Commercial services could be performed within the wilderness area to the extent necessary for realizing the recreation or other wilderness purposes of the area.

The Act does not exempt the affected resources from state water laws or the jurisdiction and responsiblities with respect to wildlife and fish in the area.

Management under these regulations would not significantly alter management of the primitive area, since they have been used as management guides for the area since primitive designation in 1973. The 4,471 acres of contiguous lands would also be subject to these regulations, which could preclude some existing uses.

Private Land Inholdings

Congress should be alerted to the strategic importance of a 280 acre private inholding, since it contributes to the total wilderness environment of the Powderhorn area. The BLM made efforts to acquire this parcel by negotiated purchase in the 1979 fiscal year. These negotiations were unsuccessful since the BLM appraised value was considerably lower than the price requested by the landowner. Efforts to negotiate purchased land acquisition or exchange with the private landowner would continue. The relationship of this inholding with the wilderness values of the surrounding public lands may necessitate the need for land acquisition authority pursuant to the proposed Powderhorn wilderness legislation.

In addition, the BLM would attempt to acquire, through exchange or purchase, 40 acres of land along the northwestern edge of the Powderhorn Primitive Area. These 40 acres would not be critical to the protection of the wilderness integrity of the Powderhorn, but could improve the manageability of the unit.

Acquisition of these inholdings without consent of the landowner would be unnecessary so long as the private property was used in a compatible manner with the purposes of wilderness designation.

Designation of Powderhorn Primitive Area

This alternative proposes wilderness designation of the existing Powderhorn Primitive Area (40,480 acres). The boundary of this unit is shown on Map 1 and within this area are 280 acres of private surface and 1,680 acres of state owned minerals.

Upon designation by Congress to the National Wilderness Preservation System these lands would be managed by BLM according to the provisions of the 1964 Wilderness Act and the 1976 Federal Land Policy and Management Act which direct the administering agency be responsible for preserving the wilderness character of the area. This management would not be substantially different from the present, since the Wilderness Act was a guiding document for preparation of the existing management plan. Allowed uses of wilderness areas are discussed under the proposed action.

Private Land Inholdings

Congress should be alerted to the strategic importance of a 280 acre private inholding, since it contributes to the total wilderness environment of the Powderhorn Primitive Area. As noted under the proposed action, the BLM has made efforts to purchase this parcel. The relationship of this inholding with the wilderness values of the surrounding public lands may necessitate the need for land acquisition authority pursuant to the proposed Powderhorn wilderness legislation. Acquisition of this inholding without consent of the landowner would be unnecessary so long as the private property was used in a compatible manner with the purposes of wilderness designation.

Use Alternative -- Maximum Development, Production, and Use of All Resources

This alternative proposes not designating the Powderhorn Primitive Area (40,480 acres) or any of the 9,660 contiguous acres which contain wilderness values as wilderness. The primitive area would lose its designation and be managed for the maximum development, production, and use that the resources are capable of providing within existing environmental protection standards.

Management objectives under this alternative would be to promote multiple use of the land with emphasis on the highest and best uses.

The area could be opened for exploration and development of locatable, leasable, and saleable minerals, forest management and timber harvest could take place, rights-of-way could be granted across the area, and ORV use could be permitted under existing guidelines.

The present withdrawal in the Powderhorn Primitive Area would be reviewed in light of the management objectives of this alternative, and could be revised or terminated.

No Action

The No Action Alternative would forego wilderness designation for the Powderhorn Primitive Area (Instant Study Area) or the contiguous lands with wilderness character (50,140 acres total). The Powderhorn Primitive Area would not retain its status as a "Primitive Area" (OAD 79-40, June 14, 1979), however, management would remain essentially the same as present.

The area would be managed for its scenic and primitive values utilizing BLM Manual 6221 and the Wilderness Act of 1964 as guidance. As the present minerals withdrawal was scheduled for review, it would be reviewed in light of this management.

Designation of All Lands with Wilderness Character

This alternative proposes wilderness designation of the Powderhorn Primitive Area (40,480 acres) and all the contiguous lands with wilderness character (9,660 acres). This area contains inholdings of 1,240 acres of private surface and 1,920 acres of state owned minerals.

Upon designation by Congress to the National Wilderness Preservation System these lands would be managed by BLM according to the provisions of the 1964 Wilderness Act and the 1976 Federal Land Policy and Management Act which direct the administering agency be responsible for preserving the wilderness character of the area.

This management would not be substantially different from the present for the portion in the primitive area since the Wilderness Act was a guiding document for preparation of the existing management plan. The 9,660 contiguous acres would also be managed consistently with the Wilderness Act.

Private Land Inholdings

The BLM would attempt to acquire through exchange or purchase the 1,240 acres of private surface. The relationship of these inholdings with the surrounding wilderness values of the public lands may necessitate the need for land acquisition authority pursuant to the proposed Powderhorn wilderness legislation. Acquisition of these inholdings without consent of the landowners would be unnecessary so long as the private property was used in a compatible manner with the proposed wilderness designation.

INTERRELATIONSHIPS

Forest Service

The Powderhorn Instant Study area is bounded to the south by Forest Service RARE II Area No. 218 (31,990 acres), which has been proposed for further study. However, there is no administrative interrelationship between the BLM wilderness study/designation process and that of the Forest Service.

State of Colorado

The State of Colorado holds the mineral rights, including ingress and egress, to 1,920 acres within the Powderhorn Primitive Area. The exploration and development of these minerals would be covered under the statutes of the State.

Private Landowners

Within the boundaries of the Powderhorn Primitive Area and the 9,660 contiguous acres, there are 1,240 acres of privately owned land. Should all or part of this area be designated wilderness, the BLM would attempt to acquire through exchange or purchase those lands which would be critical to the protection of the wilderness integrity of the area designated.

Other Land Use Plans

Any of the alternatives would be compatible with local and state land use plans in the area.

IMPACT SUMMARY

Table 2-1 presents a summary and comparison of impacts between alternatives. For more detail, see Chapter 4.

TABLE 2-1

COMPARATIVE ANALYSIS OF IMPACTS FOR THE PROPOSED ACTION AND ALTERNATIVES

Resource	No Action 1/	Proposed Action	Designation of Powderhorn Primitive Area	Use Alternative	Designation of all Lands With Wilderness Characteristics
Wilderness Resources	Formal designation of wilderness would not occur; however, 40,480 acres would be managed under wilderness guidelines	Enhancement, protection, and preservation of wilderness characteristics on some 44,951 acres	Enhancement, protection and preservation of wilderness characteristics on some 40,480 acres	Wilderness values forgone on 50,140 acres	Enhancement, protection and preservation of wilderness characteristics on some 50,140 acres
Private inholdings within the area designated for wilderness	0 acres	320 acres	280 acres	0 acres	1,240 acres
Minerals	Mineral leasing could take place on all of the 50,140 acres; mineral location could occur on the 9,660 acres of contiguous lands	Mineral leasing and location would be permitted until December 31, 1983 on the 4,471 acres of contiguous lands and mineral leasing also would be permitted on the 40,480 acres of existing primitive area until the same date	Mineral leasing would be permitted on 40,480 acres of existing primitive area until December 31, 1983	The entire area would continue to be open to mineral leasing. The present mineral withdrawal within the existing primitive area would be subject to withdrawal review and could lose the withdrawn status	Mineral leasing and location would be permitted until December 31, 1983 on the 9,660 acres of contiguous lands and mineral leasing also would be permitted on the 40,480 acres of existing primitive area until the same date
Livestock grazing	Portions of seven grazing allotments licensed at 1,821 AUMs would be managed under the wilderness guidelines	Portions of eight grazing allotments licensed at 2,002 AUMs would be managed under the wilderness guidelines	Portions of seven grazing allotments licensed at 1,821 AUMs would be managed under the wilderness guidelines	No allotments or AUMs would be managed under the wilderness guidelines	Portions of nine allotments licensed at 2,251 AUMs would be managed under the wilderness guidelines

TABLE 2-1

COMPARATIVE ANALYSIS OF IMPACTS FOR THE PROPOSED ACTION AND ALTERNATIVES
(continued)

Resource	No Action 1/	Proposed Action	Designation of Powderhorn Primitive Area	Use Alternative	Designation of all Lands With Wilderness Characteristics
Forest Resources	64 MMBF of merchantable timber with a sustained yield of 900 MBF would continue to be withdrawn from the existing timber base	An additional 6 MMBF of merchantable timber with a sustained yield of 50 MBF would be withdrawn	64 MMBF of merchantable timber with a sustained yield of 900 MBF would continue to be withdrawn	64 MMBF of merchantable timber with a sustained yield of 900 MBF would be added to the existing timber base of the area	An additional 12 MMBF of merchantable timber with a sustained yield of 100 MBF would be withdrawn
Recreation Use	Increase visitor use would continue at the present rate (approx. 8%)	An additional increase of visitor use (approx. 10%) could be added to the present rate (approx. 8%)	An additional increase of visitor use (approx. 10%) could be added to the present rate (approx. 8%)	The present rate (approx. 8% of increase of visitor use could continue; however the type of recreation would change from wilderness and back-country use to more road and ORV type of use	An additional increase of visitor use (approx. 10%) could be added to the present rate (approx. 8%)
Economics	Annual recreation values would continue at approximately $23,460 and approximately $36,000 (annually) of merchantable timber would continue to be withdrawn	Annual recreation values would continue to increase at the same rate as visitor use would increase: An additional $2,000 (annually) of merchantable timber would be withdrawn from the market area	Annual recreation values would continue to increase at the same rate as visitor use would increase: The $36,000 (annually) of merchantable timber would continue to be withdrawn	Annual recreation values would continue to increase at the same rate as visitor use would increase: Approximately $36,000 (annually) of merchantable timber could be added to the market area	Annual recreation values would continue to increase at the same rate as visitor use would increase: An additional $4,000 (annually) of merchantable timber would be withdrawn from the market area

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1/ The no-action alternative is the same as the present situation.

CHAPTER 3

AFFECTED ENVIRONMENT

Introduction

The environment described in this section includes the existing Powderhorn Primitive Area and the 9,660 contiguous acres (described in the text as the EIS area). Therefore, this description will serve as a basis for impact discussions under all alternatives.

Climate and Air Quality

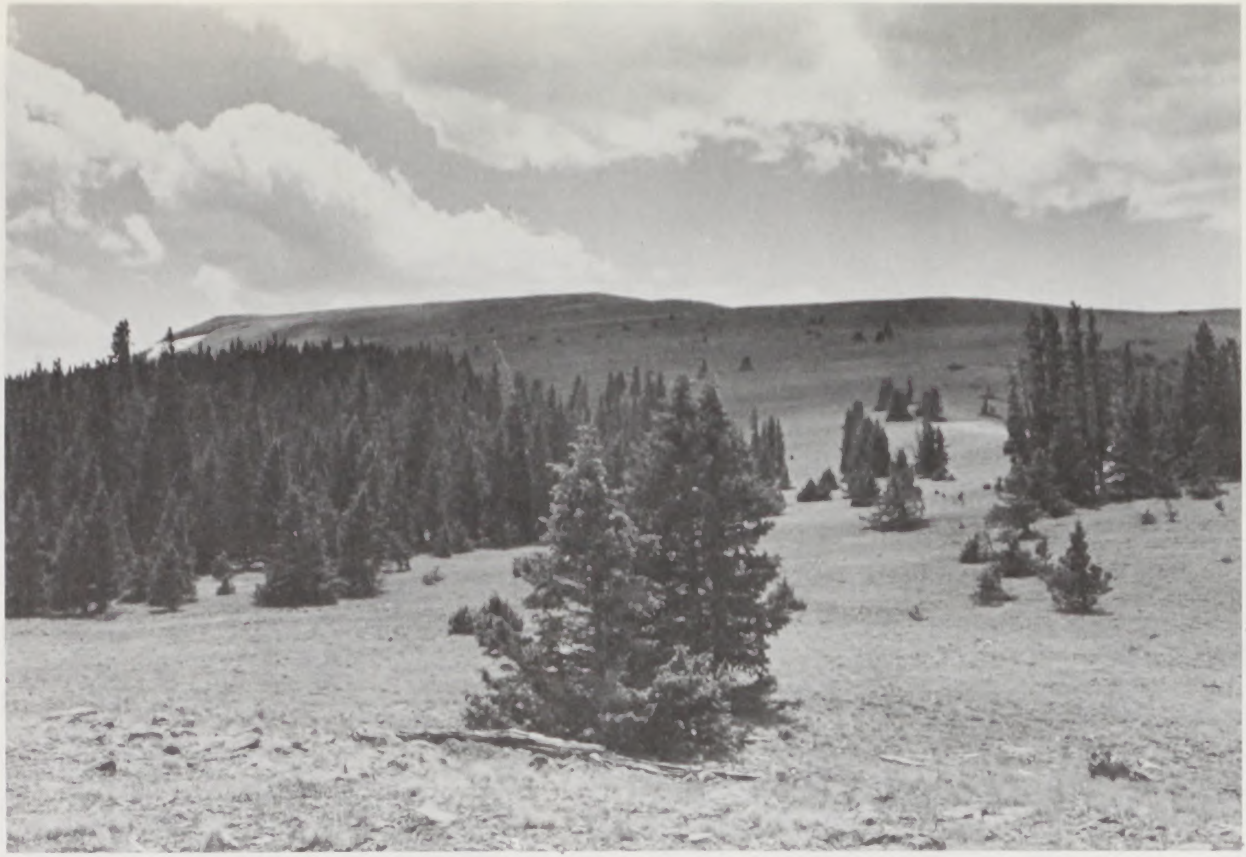
According to Sullivan (1977), "climatic conditions (in the area), particularly at the higher elevations, are severe. Temperature ranges are extreme, ranging from approximately -50 degrees F to 95 degrees F. Frost is not uncommon during any month. Mean annual precipitation varies from about 14 inches in the north to about 32 inches in the higher elevations to the south. Most of the precipitation falls as snow during the winter. Snow depths are quite variable, being influenced by exposure and altitude. The heaviest snowfall occurs in the southern portion of the area. Daily thunderstorms are the rule, rather than the exception, during the summer. Winds come from any direction but the prevailing wind is from the west and southwest. Strong winds are often encountered above tree line."

Air quality in the area is very good, approximating most other pristine, high altitude areas in the west. The area is presently a Class II area. On September 7, 1979, a Department of the Interior Task Force recommended to Congress that the Powderhorn Primitive Area be

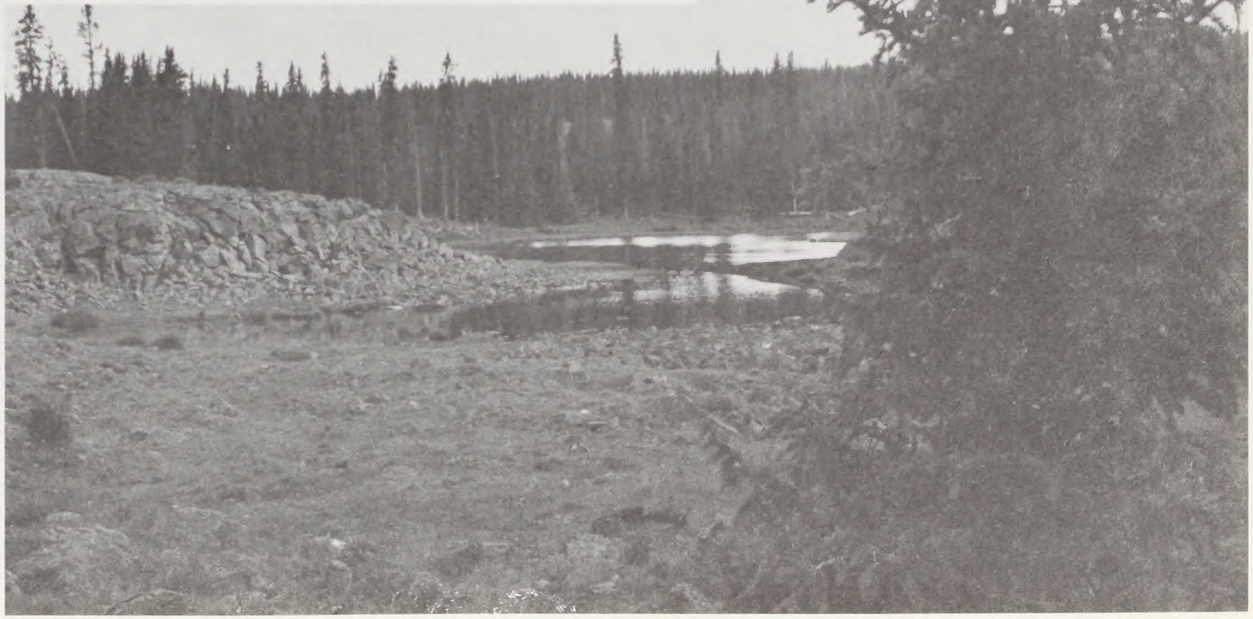
DEVILS LAKE AS VIEWED FROM CALF CREEK PLATEAU

The following photos are typical of the scenes found in the EIS area

(The photo on the cover is a view looking west over lower Powderhorn Lake)

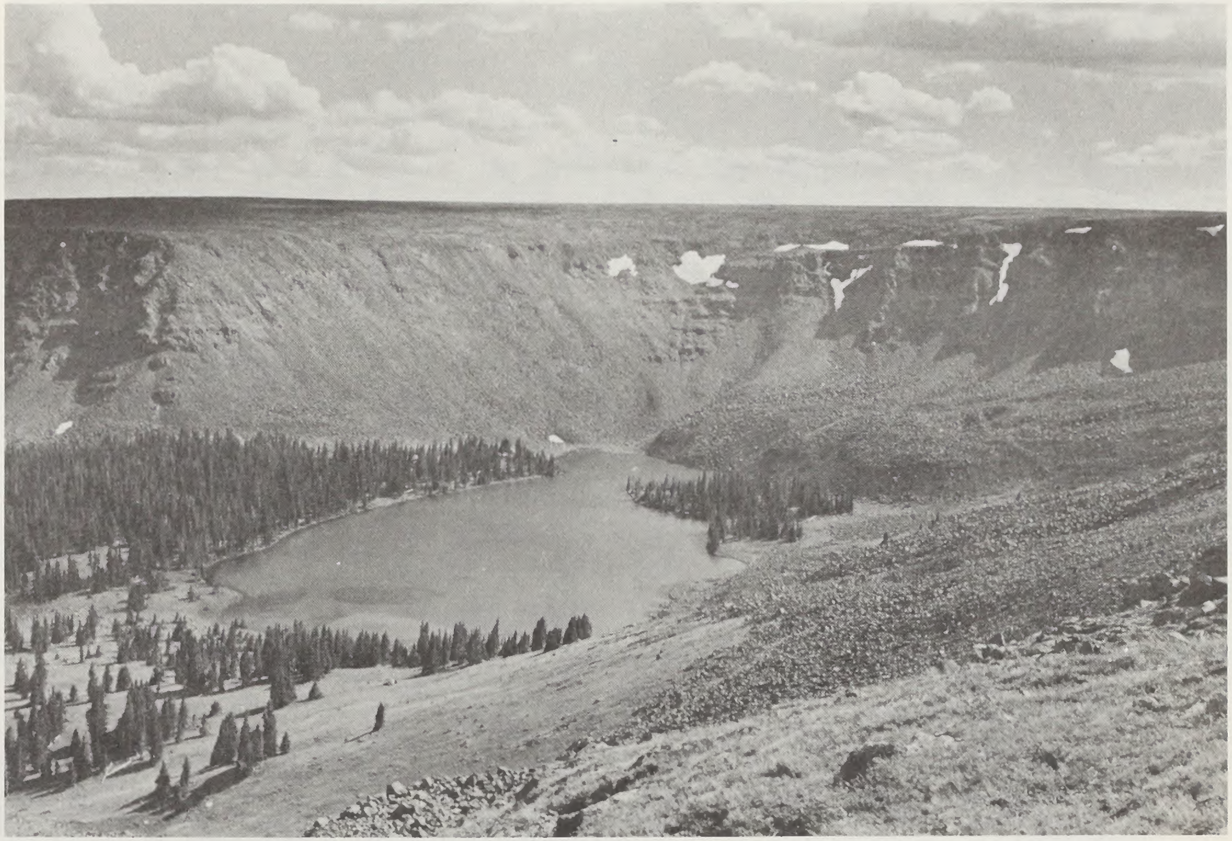


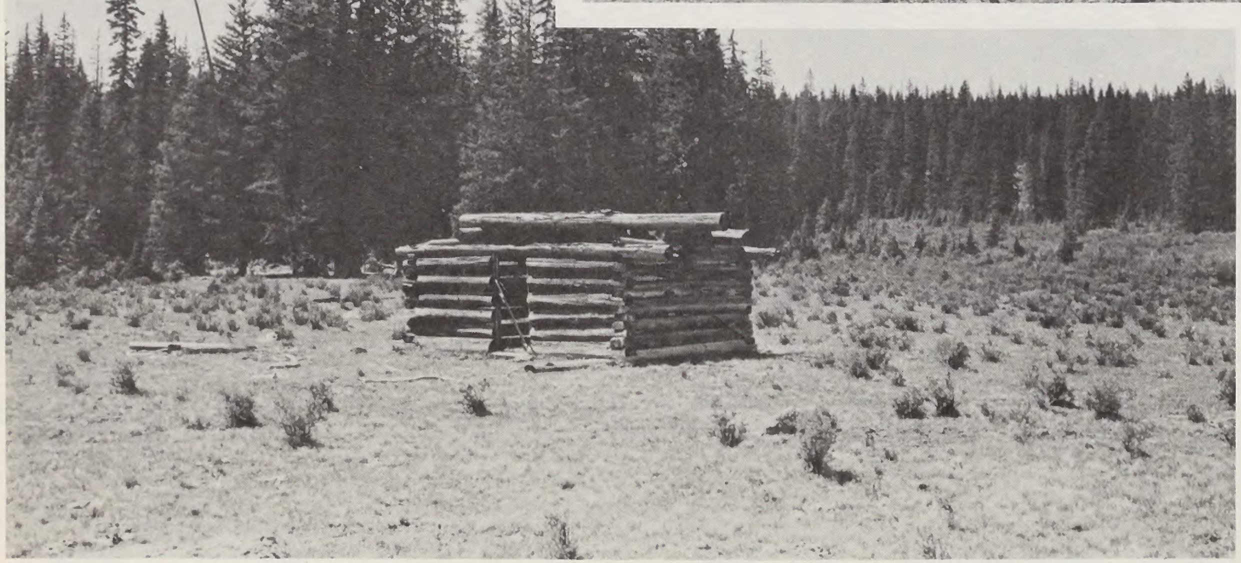
BIG MEADOW PARK AS IT CLIMBS
TOWARD CALF CREEK PLATEAU



HIDDEN LAKE

LOOKING SOUTH TOWARD UPPER
POWDERHORN LAKE AND CALF
CREEK PLATEAU





HISTORIC CABIN IN PHELPS
CABIN PARK

DEVILS CREEK DRAINAGE
DESCENDING TOWARD THE
LAKE FORK OF THE
GUNNISON

LOOKING NORTH FROM THE
SHORELINE OF UPPER
POWDERHORN LAKE

classified a Class I air quality area. Congress has not taken action on the recommendation.

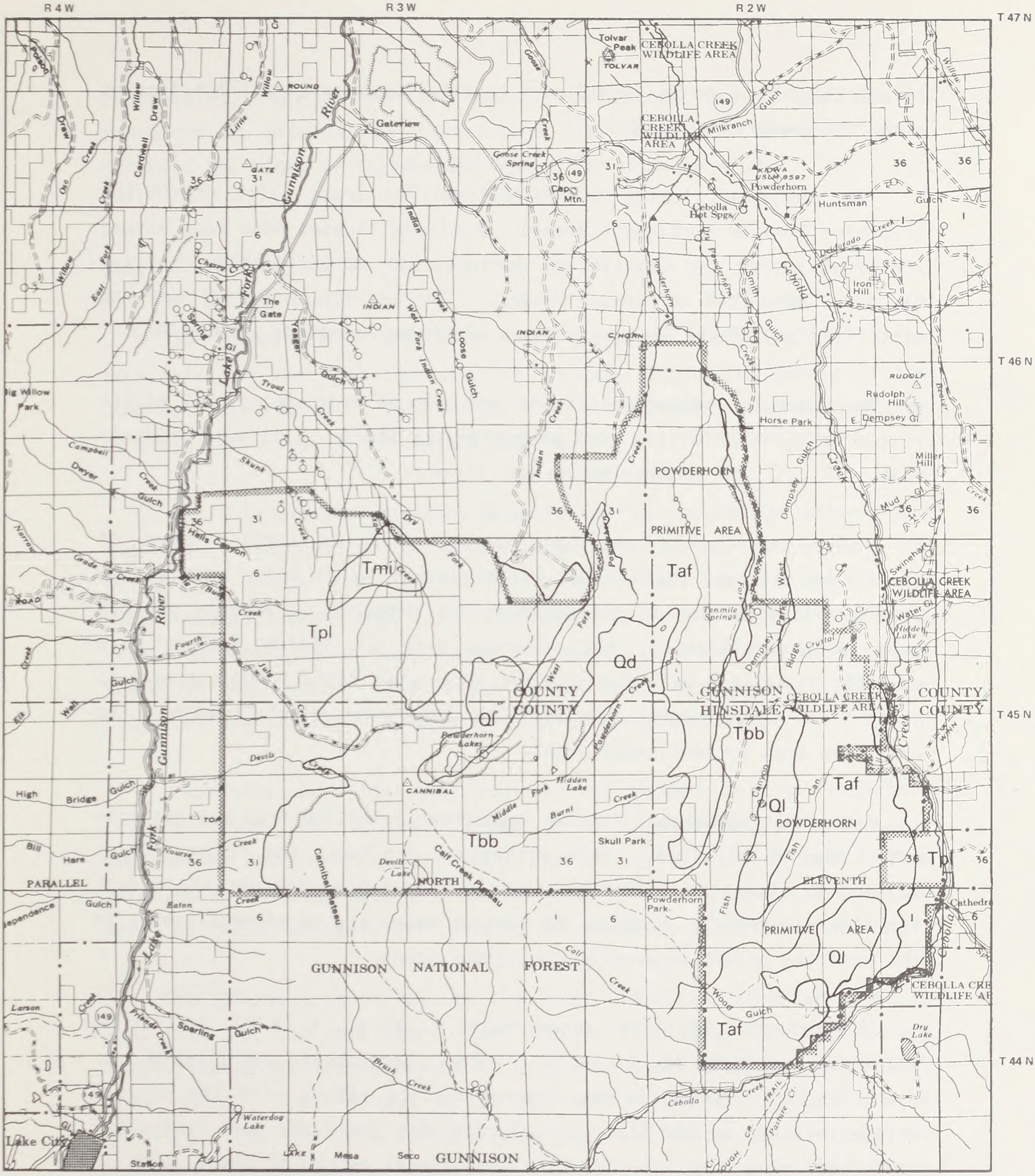
Geology and Minerals

The Powderhorn Primitive Area was covered by ash flow tuff and lava flows between 10 and 35 million years ago (Tertiary Age). These volcanic deposits are believed to be 5,000 feet thick in some areas, overlying Precambrian rocks over 600 million years old (see Map 2). Pleistocene glaciation (up to 10,000 years ago) altered the landscape by creating cirque basins, glacial tarns, morainal deposits and lakes, U-shaped valleys, and rock glaciers.

A mineral survey was conducted by the Bureau of Mines and the Geological Survey in the existing primitive area and contiguous areas. The combined report of these two agencies is not completed, but preliminary assessment information indicates the presence of thorium, titanium, and manganese in concentrations which were not economic in 1979. No other minerals were discussed in the preliminary report.

A review of past mineral activity indicates an absence of active mining and mining claims. There have been no mining claims recorded with the BLM in the existing primitive area or adjacent areas.

Sections 20, 21, and 17, T. 46 N., R. 2 W., New Mexico Prinicple Meridian are included in an area that has been designated by the Geological Survey as being prospectively valuable for geothermal energy. This designation is based on the proximity of Cebolla Hot Springs. The hot springs are located near the town of Powderhorn along the southeast-to-northwest trending Cimarron Fault. However, the potential for geothermal resources within the Primitive Area or contiguous areas



0 1 2 3 4 5 miles

N

▨ Primitive Area and 9,660 Contiguous Acres (WILDERNESS STUDY AREA)

Ql Qd Qg	Recent Alluvium, Terrace Deposits, and Landslide Deposits
Tbb	Tertiary (Miocene) Basalt Flows and other Interbedded Volcanic Rock Types
Taf	Tertiary (Oligocene) Ash-flow Tuff
Tmi	Tertiary (Miocene or Oligocene) Intrusive Rocks
Tpl	Tertiary (Oligocene) Andesitic Lavas and Volcanic Breccia

Map 2 GEOLOGIC MAP

is not considered to be significant because these areas are not located along the trend of this fault.

No geothermal leases or applications for lease exist within the Primitive Area or contiguous areas. Geothermal leases have been issued for areas nearer the Cebolla Hot Springs, but no exploratory drilling has been conducted on these leases. The Geological Survey has not classified any of the area as a known geothermal resource area (KGRA).

There are no indications of the presence of sedimentary rock strata in the existing primitive area or contiguous areas, it is very unlikely that coal, oil, or carbon dioxide are present.

The potential exists for the occurrence of certain types of industrial minerals within the volcanic rocks which cover most of the area. No information is available on the presence or absence of this type of mineralization, but minerals such as sodium zeolites are commonly associated with the volcanic rock types found in this area. At present no leases exist for leasable industrial minerals within the primitive area or contiguous areas.

A minerals withdrawal for the Powderhorn Primitive Area was put into effect August 17, 1973. This withdrawal precludes the filing of any subsequent claim for locatable minerals. Leasable minerals are exempt from the withdrawal. However, at present there are no mineral leases in the existing primitive area or contiguous areas.

A total of 1,920 acres described as T. 45 N., R. 3 W., Section 36 and S1/2 of Section 16, T. 44 N., R. 2 W., Section 16, and T. 45 N., R. 2 W., S1/2 of Section 16 are federal surface estate with the mineral estate retained by the State of Colorado when the lands were reconveyed to federal ownership (see Map 1). The mineral estate of these lands is not subject to the provisions of federal mining laws and mineral leasing laws. It is, however, subject to mineral entry for the purpose of prospecting, exploration, development, and extraction of the mineral resources as provided by statutes of the State of Colorado. This includes the right of ingress and egress for such purposes.

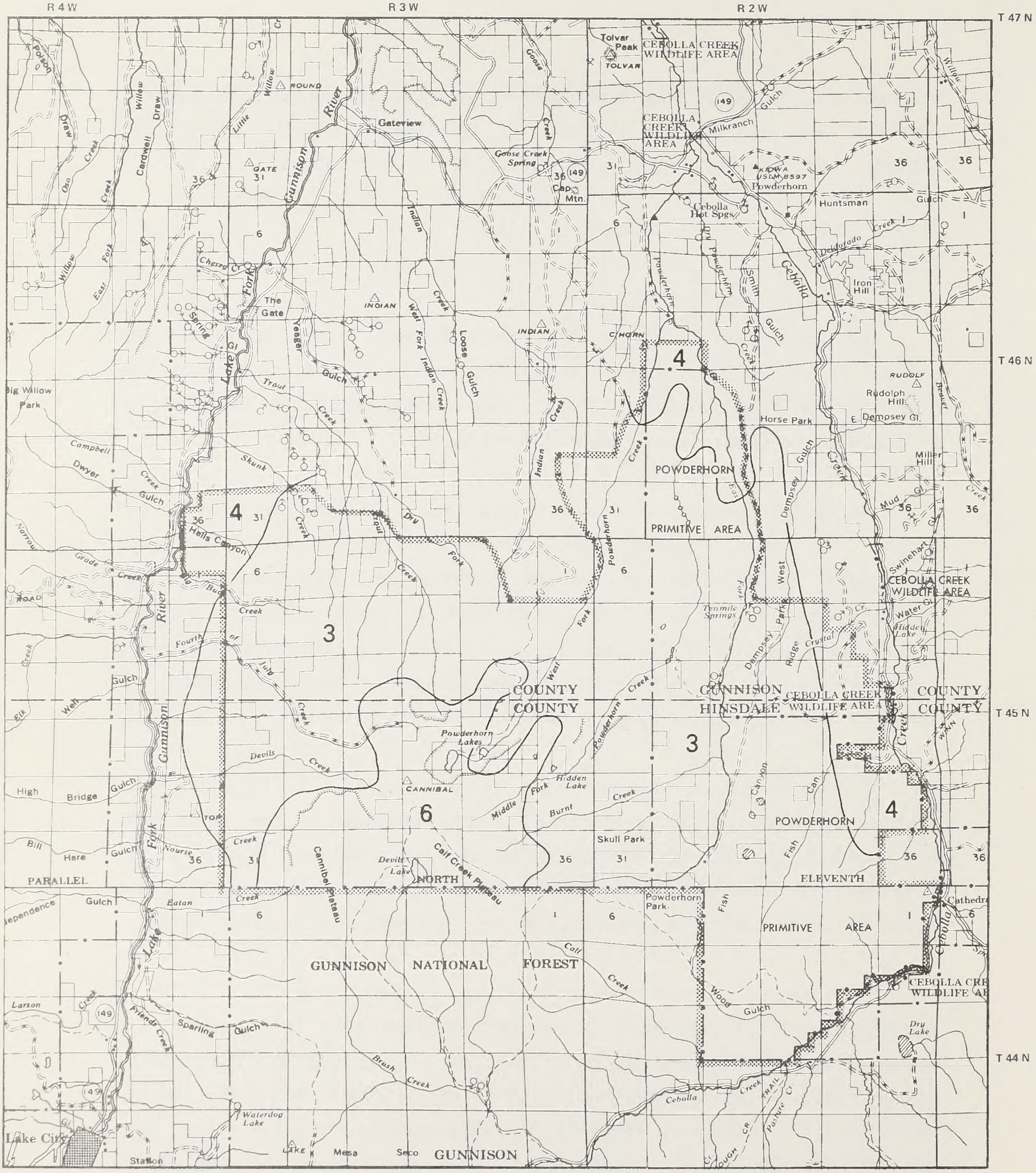
Soils

The Powderhorn Primitive Area and adjacent lands lie within the boundaries of the Soil Conservation Service (SCS) Soil Survey of the Gunnison Area, Colorado (SCS 1975). Map 3 represents the distribution of broad soil associations in the EIS area.

The Vulcan-Wetterhorn-Ruby association is located on uplands and supports a vegetation of mainly Engelmann spruce on Vulcan and Wetterhorn soils and cool-season grasses on Ruby soils. The Posant-Woodhall-stony rock land association is formed in uplands and the vegetation consists of open stands of conifers and an understory of big sagebrush and grass. The Meredith-Rockslides association occurs on long, uniform slopes, ridges, and rimlands above timberline.

Appendix S-1 lists the soil series mapped in the Powderhorn Primitive Area and adjacent areas being considered for wilderness designation and indicates pertinent physical properties of each. More detailed soil survey data are contained in the Soil Survey of Gunnison Area, Colorado, which is available at the Montrose BLM District Office.

The natural erosion rate on the lower elevation sagebrush parks is less than 0.8 ton/acre year. The erosion resulting from natural and human-related activities may be as high as 4 tons/acre/year in a few of these areas. Cattle grazing is the most significant human-related activity. The subalpine forests generally have low erosion rates, less than 0.1 ton/acre/year. Quantifiable data are lacking for the alpine areas.



Primitive Area and 9,660 Contiguous Acres (WILDERNESS STUDY AREA)

3	Vulcan Wetterhorn Ruby association: Deep and moderately deep, moderately sloping to steep, well-drained gravelly sandy loams and stony loams on mountains, ridges, and mesas
4	Posant Woodhall Stony rock land association: Shallow and moderately deep, moderately sloping to very steep, well-drained gravelly loams and stony and rocky areas on mountains, hills, and ridges
6	Meredith Rockslides association: Deep, stony, well-drained, strongly sloping to very steep soils and rockslides on mountain and alpine rimland

Map 3 GENERAL SOIL MAP

The most noticeable erosional features are the striated pattern of scars in portions of the alpine zone and active gullying in a few of those locations, notably on Cannibal Plateau above Devils Lake, as a result of sheep trailing. Cattle grazing along limited portions of some lower elevation riparian areas causes some streamback sloughing and soil compaction. The hummocky appearance of the ground in Powderhorn swamps is an extreme example of this (Figure 3-1).

Areas in which recreation activities are concentrated, primarily Powderhorn Lakes and the trails leading to these areas (Map 1), are subject to slightly accelerated soil erosion and compaction. One additional area where accelerated erosion is occurring is the way (see glossary) over Fish Canyon Ridge. Gullying is especially noticeable from the ridge down the steep grade paralleling Bear Gulch.

Water Resources

The total EIS area lies within the Upper Gunnison River Basin. The elevation varies from about 8,800 feet to 12,644 feet and the topography varies from steep sided drainages at the lower elevations to plateaus and steep-sided ridges at the upper elevations. "The general drainage pattern is radial, radiating around Calf Creek and Cannibal Plateaus. The entire area drains into either Cebolla Creek or the Lake Fork of the Gunnison River and these both flow into the Gunnison River at the Blue Mesa Reservoir. The major drainages are the East, Middle and West Forks of Powderhorn Creek, Trout Creek and Devils' Creek." (Sullivan 1977).

Because of the large beaver and other wildlife populations, livestock grazing, and uncontrolled camping, fecal pathogens (which could be ingested from drinking the water) are a threat to the area's recreationists. For an analysis of the areas chemical water quality see Table 3-1.

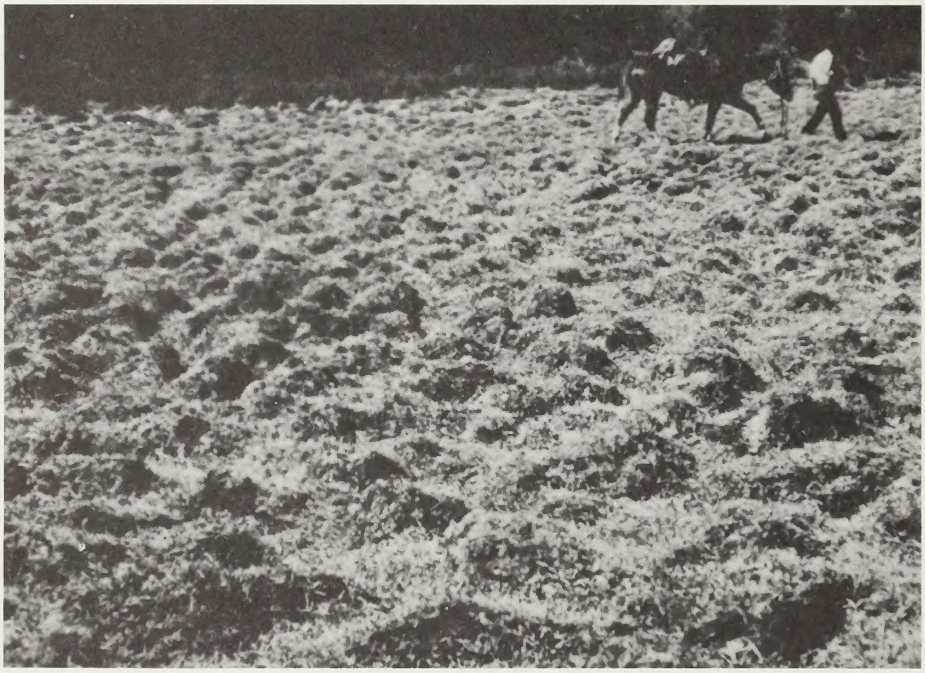


FIGURE 3-1

TABLE 3-1

CHEMICAL WATER QUALITY

Name	Water Quality Class	Quality Description	Parameter(s) Of Concern
Burnt Creek	WQ-2**	Fair***	Fe
Fish Canyon	WQ-1*	Good	(Possible NO_3)
Hidden Lake	WQ-1	Good	-
Hot Springs Creek	WQ-2	Fair	Fe, Mn, AL
Indian Creek (upper)	WQ-1	Good	-
Phelps Cabin Creek	WQ-1	Good	-
Pine Creek	WQ-1	Good	-
Powderhorn Swamp Creek	WQ-1	Good	-
Powderhorn Creek	WQ-2	Fair	Fe
East Fork Powderhorn Creek	WQ-2	Fair	Fe
West Fork Powderhorn Creek	WQ-1	Good	-
Middle Fork Powderhorn Creek	WQ-1	Good	-

* WQ-1 Meets all chemical water quality standards for drinking water.
** WQ-2 Exceeds one or more standards, non-toxic.
(WQ-1 and WQ-2 are federal and state standards)
*** Subjective description based on Water Quality Class

Fe = Iron, Mn = Manganese, NO_3 = Nitrate, Al = Aluminum

Source: Gunnison Basin Unit Resource Analysis 1979

Vegetation

Vegetation Types

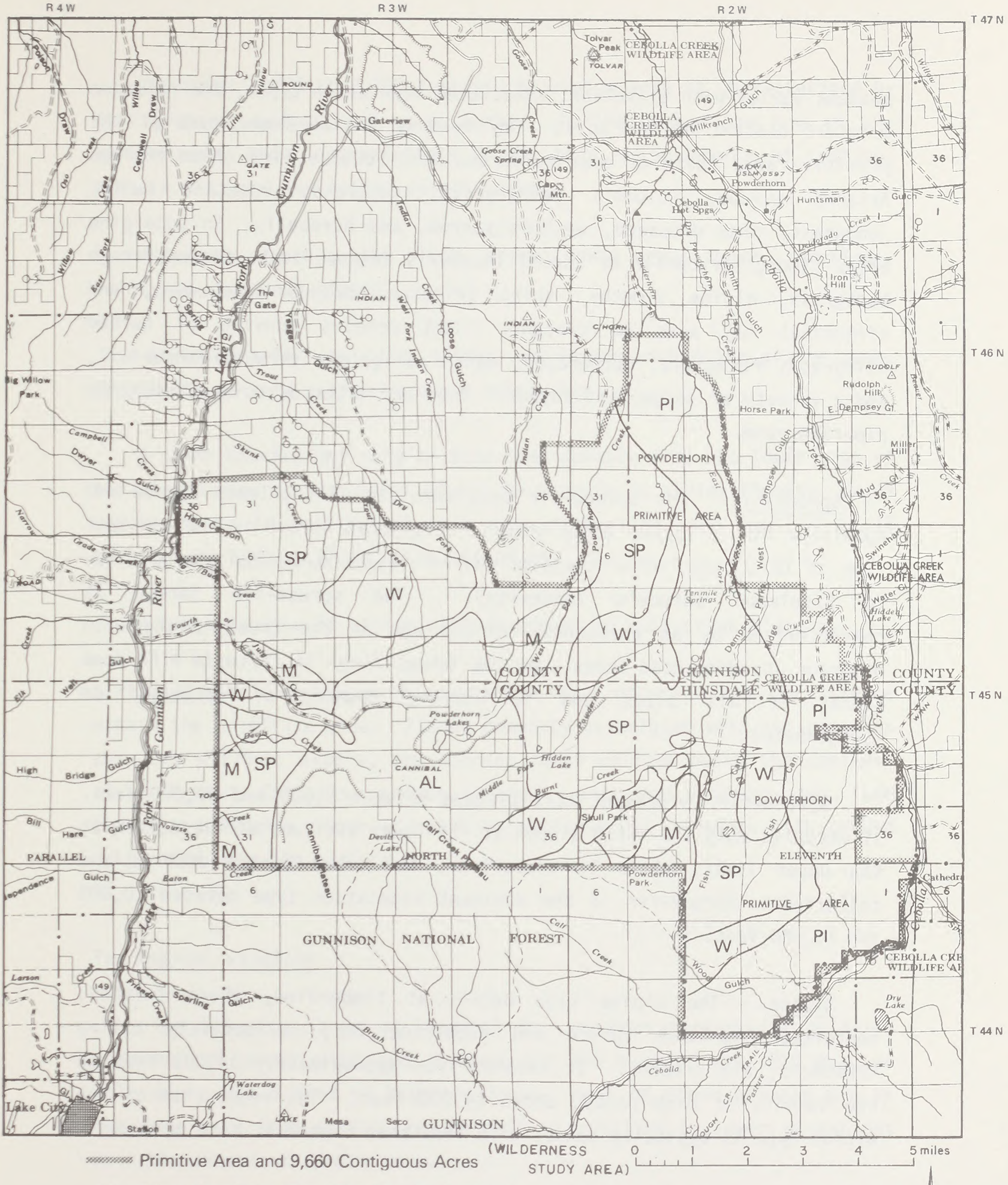
The natural vegetation in the Powderhorn Primitive area consists of a mosaic of several vegetation types. Each type is characterized by one or two conspicuous dominant plant species, or an association of several codominant species. More detail on the plant species may be found in USDI, BLM 1980. See Map 4 for an overview of the vegetation types.

Sagebrush. The sagebrush type consists of big sagebrush (Artemisia tridentata vaseyana) parks interspersed with ponderosa pine, in the lower elevations of the primitive area. Douglas rabbitbrush and antelope bitterbrush are often associated with sagebrush.

Ponderosa Pine-Douglas Fir. The ponderosa pine-Douglas fir vegetation type is actually composed of two rather distinct subtypes that occur in the same altitudinal range, but which occupy areas with different environmental conditions. Ponderosa pine grows at approximately 7,000 to 9,000 feet, on relatively dry mesas and south-facing slopes. The Douglas fir subtype is most well developed at the same elevation, but occupies areas which are more moist--usually protected north-facing slopes. Bristlecone pine may also occur near the upper limit of the ponderosa pine-Douglas fir type, usually on dry, south-facing slopes.

Aspen. Aspen occurs as a stable, rather continuous forest belt in the primitive area between 9,500 and 10,500 feet, although it extends as low as 8,500 feet and as high as 11,200 feet. Understory vegetation beneath aspen is typically very lush and consists of a large diversity of grasses and forbs.

Meadows. Meadows are common in the woodlands of the lower mountains and subalpine areas in the primitive area. The plant composition of the



▨ Primitive Area and 9,660 Contiguous Acres (WILDERNESS STUDY AREA)

PI	Mixed Ponderosa Pine / Douglas Fir, Sagebrush, and Bristle-cone Pine
M	Meadows
SP	Spruce / Fir
W	Willow
AL	Alpine

Map 4 VEGETATION MAP

meadows varies with elevation, associated vegetation types, and relative moisture content of the soil. Dry meadows in the lower part of the primitive area (with or near ponderosa pine-Douglas fir) often include Arizona fescue, Columbia needlegrass, oatgrass, mountain muhly, junegrass, pine dropseed, western yarrow, and harebell. In subalpine areas (among spruce-fir or aspen) Thurber's fescue, Idaho fescue, rough bentgrass, alpine timothy, spike trisetum, orange sneezeweed, and cinquefoil may also be present. Wet meadows consist of tufted hairgrass, reedgrass, buttercups, marsh marigolds, shrubby cinquefoil, and a variety of sedges and rushes. They are often associated with the riparian zone.

Spruce-Fir. The spruce-fir type consists of Engelmann spruce and subalpine fir in rather dense stands. Engelmann spruce is the dominant tree of this type, with subalpine fir of lesser abundance (largely due to Engelmann spruce's longevity). The spruce-fir forest is characterized by an unevenness in the age of the trees, along with numerous standing dead trees, and the forest floor is littered with dead trunks of all sizes and in varying degrees of decomposition (Langenheim).

Spruce-fir is present at altitudes between 8,500 and 12,000 feet. It occupies only the north slopes at its lower altitudinal limit, and at the upper limit, which is timberline, the trees become dwarfed and contorted. Spruce-fir is the dominant vegetation type between 10,000 and 11,500 feet.

Alpine. The alpine type begins at timberline, where twisted, contorted Engelmann spruce and subalpine fir, collectively called Krummholz, are present. It extends from approximately 11,000 feet to the summits of high peaks, above 14,000 feet. The vegetation of the alpine type is typically dense, with less than 5 percent bare ground.

The lower 1,000 to 2,000 feet of the alpine zone is characterized by tall grasses, sedges, and erect forbs. In the higher portions of the alpine zone, above approximately 12,000 feet, an abundance of cushion, rossete mat, and low-tufted plants occur.

Kobresia, a sedge-like plant, covers large areas above timberline, mainly on windswept ridges.

Boulder fields and talus slopes are common within the alpine zone. Vegetation is very sparse on these substrates.

A plant species may vary in size considerably from the lower edge of the alpine zone to the upper edge. An example is alpine timothy, which may be 35 to 40 centimeters tall near timberline, and just 10 to 15 centimeters tall at 13,000 feet elevation.

A large expanse of alpine willows occurs on Calf Creek Plateau.

Riparian. The riparian vegetation type occurs along the streams within the primitive area. Plants commonly associated with the riparian zone are willows, alders, and birches, with willows being the dominant plant type. Cattails, sedges, rushes, bulrushes, spikerushes, and Kentucky bluegrass occur adjacent to watercourses in areas with ground water very near the surface.

Terrestrial Wildlife

The EIS area is an environment for numerous terrestrial wildlife species. The most prominent of these are 360 head of elk, 220 head of mule deer, and 5 head of bighorn sheep. Most of these animals are in the area only from spring through fall, travelling to lower elevations with the advent of winter snow.

The area is also habitat for many other species of wildlife. Some of the animals occurring in the EIS area are listed in Table 3-2 by habitat type. There are five basic habitat types: riparian, woodland, meadow, rock, and alpine. These types are the same as the vegetation types described in the Vegetation section, except that the woodland habitat type encompasses the spruce-fir, aspen, and ponderosa pine-Douglas fir type. Detailed lists of the mammals and birds occurring in the EIS area are contained in a Master's Thesis by Sullivan (1977), available at the BLM District Office in Montrose, Colorado. There are presently no threatened or endangered species in the EIS area.

Aquatic Wildlife

The major streams draining the EIS area are the East, Middle, and West Forks of Powderhorn Creek, Fourth of July Creek, West Fork Indian Creek, and Trout Creek. Tributaries to these streams and other major tributaries draining the EIS area are listed in Table 3-3 which indicates the approximate miles that would be affected by the actions described in this EIS.

There are an estimated 67.4 total miles of stream habitat in the EIS area. All of these stream miles are considered to be potential fish habitat. Of the 67.4 total miles of habitat (aquatic and riparian), 63.9 miles are perennial and 62.3 stream miles flow through lands administered by the BLM.

The fishery resource in the EIS area consists primarily of the major drainages listed in Table 3-3. At the present time, there are no data on the habitat condition or fish species present in approximately 38 percent of the stream miles under consideration. However, an extensive overview of the area seems to indicate that many of the streams listed provide potential fish habitat. Brook trout and brown trout appear to be most numerous in the stream miles intensively surveyed. Rainbow and

TABLE 3-2

TERRESTRIAL ANIMAL SPECIES BY HABITAT TYPE

	Riparian	Woodland	Meadow	Rock	Alpine
Mammals					
Elk	X	X	X		X
Mule Deer	X	X	X		X
Bighorn Sheep			X	X	X
Black Bear	X	X	X		
Mountain Lion	X	X	X		
Coyote	X	X	X		
Bobcat	X	X	X		
Beaver	X				
Porcupine	X	X	X		
Marmot	X	X	X	X	X
Pika				X	X
Pocket Gopher	X	X	X		
Cottontail Rabbit	X	X	X		
Snowshoe Hare	X	X	X		
Red Squirrel	X	X			
Ground Squirrel	X	X	X		
Chipmunks	X	X	X		
Birds					
Blue Grouse	X	X	X		
Ptarmigan	X				X
Waterfowl	X				
Shorebirds	X				
Raptors	X	X	X	X	
Passerines	X	X	X	X	X
Reptiles					
Wandering Garter Snake	X				

TABLE 3-3

MAJOR STREAM MILES AFFECTED IN THE EIS AREA 1/

	Approximate Miles					
	Total		BLM			
Stream Name	Per.	Inter.	Per.	Inter.	Fish Species Present 2/	Aquatic Habitat Condition 3/
East Fork Powderhorn	11.6		11.6		Bk, Bn	Good
Middle Fork Powderhorn	10.2		10.2		Bk, Bn	Fair
West Fork Powderhorn	9.1		9.1		Bk, Bn, Rb, Nt	Excellent
Phelps Cabin Creek	1.9		1.9		ND	ND
Burnt Creek	4.5		4.5		ND	ND
Fish Canyon	3.2		3.2		ND	ND
Wood Gulch	2.3		2.3		ND	ND
Devils Creek	3.0		3.0		ND	ND
Fourth of July Creek	4.5		3.8		Bk	Fair
Trout Creek	7.8		3.9		None	Fair
Big Buck Creek	2.2	0.6	2.2	0.4	ND	ND
Hells Canyon		1.5		1.2	ND	ND
Skunk Creek	1.5		1.5		ND	ND
Indian Creek	0.3		0.3		None	Fair
Crystal Creek		1.4		1.4	ND	ND
West Dempsey Gulch	1.8		1.8		ND	ND
Subtotals	63.9	3.5	59.3	3.0		
TOTALS	67.4		62.3			

Note: Per. = Perennial; Inter. = Intermittent; ND = No data.

1/ Miles based on USGS quads

2/ Bk = Brook; Bn = Brown; Rb = Rainbow; Nt = "Native" cutthroat

3/ Based on Gunnison Basin Livestock Grazing EIS cutthroat were observed in West Fork Powderhorn Creek only. (Refer to the Gunnsion Basin Livestock Grazing EIS for a further discussion on species present).

Lakes and Reservoirs

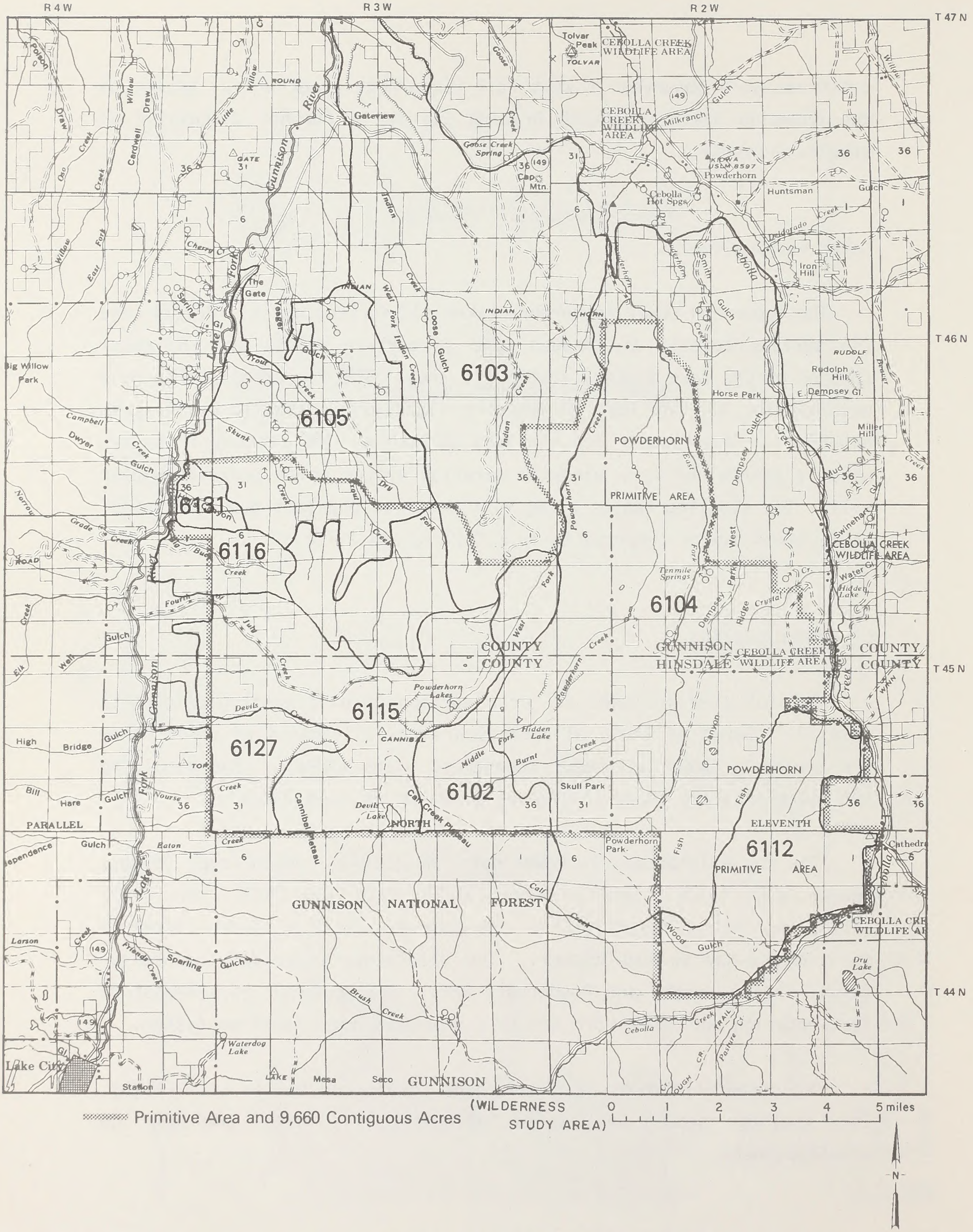
The Upper and Lower Powderhorn Lakes (33 surface acres), Devils Lake (43 surface acres), and Hidden Lake (2 surface acres) are the major portion of the lake fishery in the EIS area. The Powderhorn Lakes have been stocked for the last 18 years by fixed wing aircraft, Devils Lake has been stocked by air for the last 11 years. The fishery in Devils Lake is maintained by a windmill aeration system which prevents winter kill. The stocking tables along with detailed physical descriptions of these lakes may be referred to in BLM 1979a and 1979b.

Livestock Grazing

The EIS area includes all or a portion of nine grazing allotments (Map 5). Seven of these allotments are cow allotments of which three are presently under allotment management plans (AMPs). The remaining two allotments are sheep allotments which do not have AMPs.

The cow allotments are Powderhorn AMP (6104), Indian Creek (6103), Yeager Gulch (6105), Cebolla Creek (6112), Lake Fork (6127), Ute Trail (6116), and Hells Canyon (6131). The grazing period on these allotments is from mid-May to mid-October. The allotments under AMP are Yeager Gulch, Indian Creek, and Powderhorn AMP. Yeager Gulch is a 4-pasture rest-rotation and Powderhorn AMP is a 5-pasture rest-rotation system.

The sheep allotments are Powderhorn (6102) and Devils Lake (6115). The grazing season on these allotments is from mid-July to mid-September.



Map 5 LIVESTOCK GRAZING ALLOTMENTS

As noted in Table 3-4, the allotments total 75,547 acres and 3,971 AUMs. The allotments or portions of allotments included within the total EIS area include 40,929 acres and 2,251 AUMs.

The range facilities in these allotments consist of springs and fences. There are nine springs in the area of which six are in the Yeager Gulch Allotment, three are in the Powderhorn AMP Allotment, and one is in the Indian Creek Allotment. There are approximately 2 miles of fence in the area of which .75 mile is in the Hells Canyon Allotment, .75 mile is between the Yeager Gulch and Ute Trail allotments, and .5 mile is in the Powderhorn AMP.

There are no facilities in the sheep allotments except a 2.5 mile section of a 4-wheel drive way (see glossary) that is in the Devils Lake Allotment. The permittee is the only one allowed use of this way to deliver groceries and staples to his sheep herder. By agreement with the BLM, the permittee may make one round trip per week from July 1 to September 15 of each calendar year. The way remains open to the permittee since it is the access to 280 acres of private land (owned by the permittee) within the primitive area.

Cultural Resources

The Powderhorn area has not been the subject of any inventory or site recording. The land surrounding the primitive area has had very limited sampling and is very poorly understood when considering its prehistoric use. The general prehistory of the Gunnison Basin has been addressed by a BLM Class I inventory (overview), The Archeological Resource Areas, West Central Colorado, by Allan D. Reed and Douglas D. Scott. The history of the Gunnison Basin has also been addressed in a Class I inventory. A Frontier In Transition; A History of Southwestern Colorado, by Paul M. O'Rourke. Both documents are available at the Montrose District Office of the BLM.

TABLE 3-4

ACREAGES AND AUMS BY ALLOTMENT UNDER EACH ALTERNATIVE

Allotment (number)	Total 1/ Acres in Allotment	Total 2/ AUMs in Allotment	Acres 3/ Under the Proposed Action	AUMs Under the Proposed Action	Acres 4/ in the Existing Prim. Area	AUMs in the Existing Prim. Area	Acres in 5/ Total EIS Area	AUMs in Total EIS Area
Powderhorn AMP (6104)	28,799	1,200	17,279	720	14,400	600	17,279	720
Indian Creek (6103)	18,714	800	936	40	936	40	1,871	80
Yeager Gulch (6105)	7,206	646	360	32	360	32	2,162	194
Cebolla Creek (6112)	6,477	327	6,477	327	6,477	327	6,477	327
Lake Fork (6127)	1,784	44	1,427	35	1,427	35	1,427	35
Ute Trail (6116)	747	37	149	7	0	0	448	22
Hells Canyon (6131)	723	32	0	0	0	0	723	32
Powderhorn (6102)	4,022	347	3,821	330	3,821	330	3,821	330
Devils Lake (6115)	7,075	538	6,721	511	6,014	457	6,721	511
TOTALS	75,547	3,971	37,170 6/	2,002	33,435 6/	1,821	40,929 6/	2,251

1/ Entire allotment, including areas outside of any of the alternatives.
2/ AUMs reflect the recommendations contained in the Gunnison Basin Management Framework Plan and analyzed in the Gunnison Basin Livestock Grazing EIS. They would not be affected by any of the wilderness alternatives.
3/ Includes the existing primitve area and 4,471 contiguous acres.
4/ Includes the existing primitive area only.
5/ Includes the existing primitive area and 9,660 contiguous acres.
6/ These totals do not match the totals proposed for designation under each alternative, since there are parcels in the area not allotted to livestock grazing.

Note: The numbers of acres and AUMs included under the total EIS area, primitive area, and proposed action columns approximate the percentages of the allotments that fall within those boundaries. These percentages are estimates, and do not take variables such as animal preference or different conditions within a pasture into account. However, they can be used as general guidelines.

Archeological Resources

Although no sites have been recorded in the Powderhorn area, it is anticipated that prehistoric values do occur in the area. There are little data on which to make definitive statements concerning the prehistory. It currently appears man has resided in the area for the last 10,000 years. During that time he followed an archaic or hunting gathering lifestyle seasonal round, but he may not have resided in the Gunnison Basin on a year-round basis. He may have more intensely used the area during the warmer months of the year. There is some evidence for a period of climatic change during and immediately after the altithermal era. Most elevation ranges and ecozones were used prehistorically and by the historic Utes living their seasonal round of hunting and gathering. The only aboriginal occupants of the area known to historic sources were the Ute Indians.

The Powderhorn area is high in elevation and contains no known archeological resources, however, very little inventory has been done in the area. Four sites are known (5GN 85-88) which are located along the Lake Fork of the Gunnison River. All of these sites are lithic scatters that suggest a high mountain ecozone exploitative strategy.

Historic Resources

Historical development in the area has been one of transition marked by a changing perception of resource utilization. Initial and significant development began with prospecting and mineral extraction in the 1870s. The lure of potential mineral resources in the region, spurred by rich finds in the Central Rockies, prompted major yet often transitory settlement, forced treaty negotiations with Ute inhabitants, and fostered the construction of necessary transportation arteries through the mountains. With removal of the Utes in 1881 and the immediate entrance of the railroads, a second and more diverse period of development took place. Railroad transportation had a profound impact on the growth and consolidation of the mining industry in the period from 1881 to the turn of the century. Accessibility promoted new migration to the area, and town development took on a more permanent character. The substantial growth in the region after 1881 prompted the significant rise in agriculture and the livestock industry. The decline in the metals industry by the turn of the century further stimulated agricultural activity. By 1920 cattle raising and related pursuits had become more profitable and more extensively practiced than mining in the area.

Modern use and occupation in the area resembles those characteristics found in the latter stages of development. The addition of a tourist industry in recent times has affected the Powderhorn area.

There are no inventoried historic sites located within the Powderhorn Primitive Area (it has not been surveyed). Numerous historic mining, ranching, and transportation sites are to be found in the vicinity of the area such as the Lake City Historic District, the Barlow and Sanderson Stage Line Route, and the site of Alferd Packer's companion's graves which is also the scene of the murder and cannibalism of the victims. Four log cabins are known to exist in the primitive area, but they have not yet been recorded or evaluated for their historic significance or integrity. The primitive area also contains the highest patented homestead in the United States (the 280 acres of private land).

Cannibal Plateau, which is named in commemoration of Packer's deed, is partially within in the area. However, the plateau has no historic value except for its name.

National Register Considerations

Consultation with the State Historic Preservation Officer, the Office of the State Archeologist, and the annual listings of the National Register of Historic Places indicated no known archeological or historic properties located in the Powderhorn area.

Visual Resources

The EIS area is located in Gunnison and Hinsdale counties, Colorado, 10 miles northeast of Lake City. Most of the area is bounded by other BLM administered lands or national forest systems lands. A small part of the area is bordered by private land. The elevation of the area ranges from about 8,800 feet in the northeastern portion to a high point of 12,644 feet in the south central area. The entire site is located in the physiographic region known as the Southern Rocky Mountains.

The general character of the primitive area and contiguous lands is very diverse, with undulating topography. Shear rock canyons, various communities of plant materials, standing and flowing water and oustanding adjacent scenery exist in the area. The existing 40,480 acres of primitive area status has landscape characteristics reflective of its present VRM Class I classification. All lands contiguous to the primitive area that were found to be suitable for wilderness designation are similar in character, but reflect a greater number of man's impacts. They consist mostly of VRM Class II areas with some Class IV (as a result of logging activities outside the contiguous areas).

At the higher elevations to the southwest the forms of two large plateaus dominate the area, Calf Creek to the east and Cannibal to the west. The drainages of these two great landforms engulf the EIS area, especially to the east where the three Powderhorn canyons extend themselves north and down toward the community of Powderhorn (West, Middle, and East Forks). Drainages to the south (Trout and Indian Creeks) and west (4th of July and Devils creeks) are not emphasized as much due to either their location, lack of water features, access, or length of miles within the Powderhron area. Another dominant landform running north-south in the southeast corner of the area is Fish Canyon Ridge. One portion of the Powderhorn area that is visible from outside its boundaries parallels the dirt road along Cebolla Canyon. Fish Canyon Ridge, however, offers an excellent screen for the inner portions of the area. All viewsheds are dominated by the natural environment, and very few human influences are noticable.

Landform/Water

Landform diversity ranges from narrow steep-sloping stream bottoms to broad, gently rolling side hills to massive and precipitous rock slides and outcrops to expansive, slightly bowl-shaped high mountain valleys. The form of the landscape, as described, is very defined; the lines deliniate exposed rock outcrops and skylined plateaus, ridges and peaks. Colors in the landform are predominately buff to gray to darker browns, and textures are from moderately smooth to coarse. Water is present in various degrees. Small springs and streams leading to larger drainages are frequent. In the dominant drainages beaver activity can be observed in the aspen cleared areas of the valley bottom and side hills. The numerous ponds thus created give the viewer diversion and relief from the usual stream-side landscape. The Middle Fork of Powderhorn Creek is a good example of this. Several bodies of water appear at the higher elevations, Powderhorn, Devils, and Hidden lakes.

Vegetation

Vegetation in the area consists of the riparian species of willows, grasses and various trees, the intermittent sagebrush/grass parks; the lower ponderosa pine forests, the pioneer aspen stands, the higher spruce/fir forests, and the tundra zone above tree line. (For a more detailed description, see Vegetation).

The form of the vegetation extends from pointed and upright to flat. Lines are vertical to horizontal. Color is light to dark green in the spring and summer, fall introduces yellows, oranges and reds; and winter is predominately olive greens and grays.

With the variety of landscape character types and the many contrasting elements (form, line, color and texture) within each landscape environment, the viewer is exposed to a number of different and often unique environmental settings.

Structures

Structures, all man-made in origin, are major factors in initially determining the wilderness potential of all lands. The Wilderness Inventory Handbook makes it clear that the imprint of man's work must be substantially unnoticable. The only noticable structures in the Powderhorn area are four cabins, a windmill, and several ways. The structural makeup and location of the cabins is such that they do not attract attention in the natural environment and contribute to the wilderness values. The naming of Phelps Cabin Creek indicates the historical importance attached to one of these structures. The windmill at Devil's Lake is a visual intrusion, but it is slight against the natural landscape.

Lands contiguous with the primitive area have other human modifications. These include reservoirs, fences, developed springs, check dams, and various ways. The wilderness inventory done in the summer of 1978 suggests that these cultural modifications have potential for rehabilitation. At the present these modifications contribute little visual impact to the existing natural environment. The Indian Creek timber management site is a visual intrusion adjacent the primitive area. Although this site is located outside the realm of wilderness consideration, it is heavily used as one of the major trailhead access points.

Visual Resource Management Classes

Visual Resource Management (VRM) classes respresent the overall existing quality of and management policy on the environment. They describe the degree of alteration that idealistically could be allowed within a characteristic landscape. The VRM classes are therefore management objectives setting forth limits of allowable visual impact. Categories range from Class I through Class V. Class I, being the most restrictive, provides primarily for natural ecological changes. Each remaining class in succession allows greater degrees of visual intrusions impacting the natural environment. All areas carrying special designations, such as Area of Critical Environmental Concern and Wilderness, are classified as VRM Class I. This classification is determined by considering; (1) the visual aspect of the environment, (2) man's impacts, and (3) the need for a more protective management policy. For VRM Class Objectives see Table 3-5. Refer to Map 6 for VRM class boundaries as they relate to the different alternatives.

Forestry Resources

Description

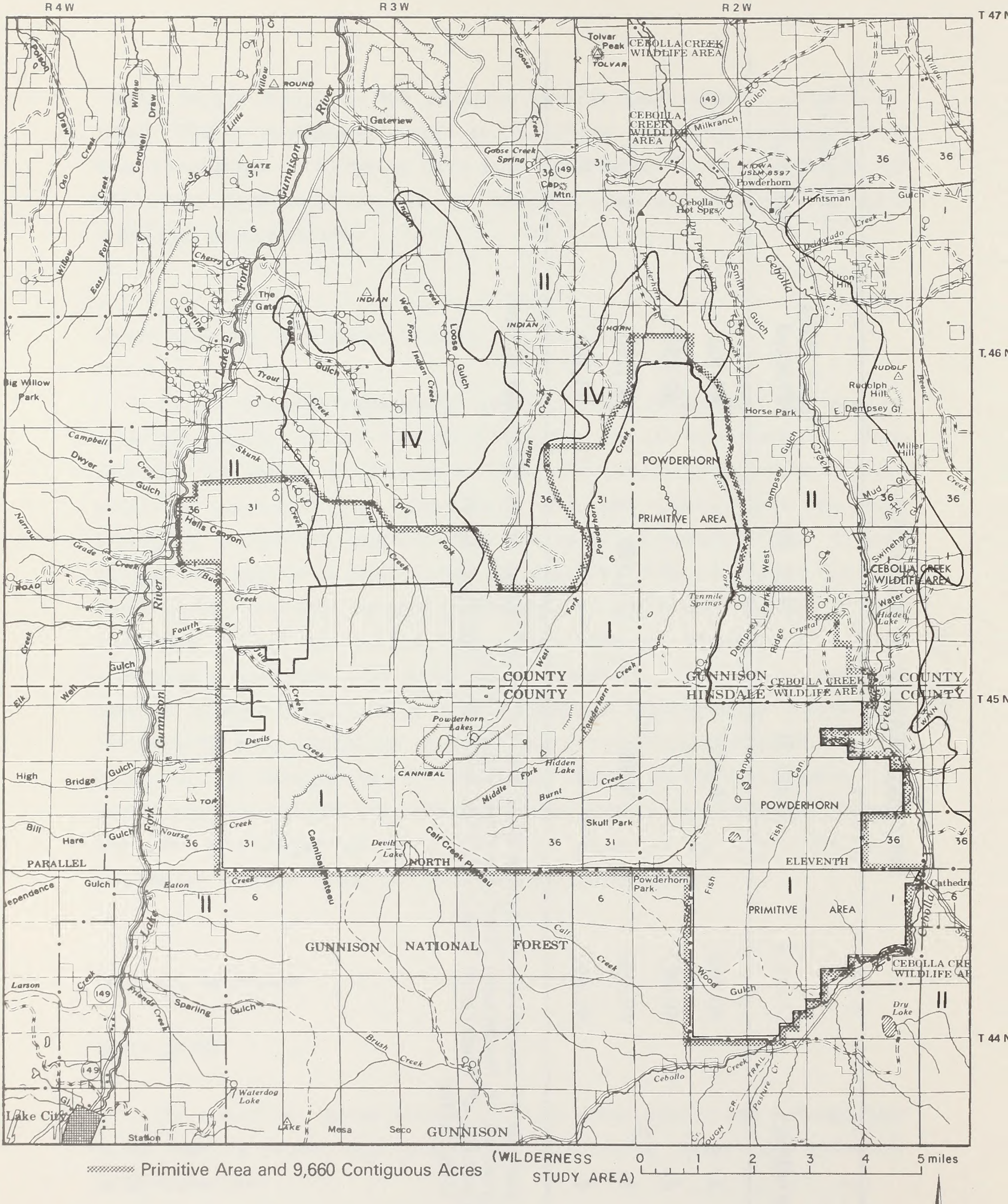
The timber in the primitive area and contiguous areas extends from 8,200 feet to 12,000 feet elevation. The timber types vary primarily with elevation.

TABLE 3-5

VRM CLASSIFICATIONS BY ALTERNATIVE

Alternative	Class I	Class II	Class IV	Total Acres Affected	Ultimate VRM Class After Action
1.	40,480	4,471	--	44,951	I
2.	40,480	--	--	40,480	I
3.	40,480	5,960	3,700	50,140	I
4.	40,480	--	--	40,480	II

1. Designation of Powderhorn Primitive Area and 4,471 Contiguous Acres (Proposed Action)
2. Designation of Powderhorn Primitive Area and No Action
3. Designation of Powderhorn Primitive Area and 9,660 Contiguous Acres
4. Use Alternative



▨ Primitive Area and 9,660 Contiguous Acres

Map 6 VISUAL RESOURCE MANAGEMENT CLASSES

Ponderosa pine predominates between 8,200 feet and 9,500 feet. These stands are on dry, marginal timber sites. The ponderosa stands are understocked and unevenaged. The total volume of ponderosa pine in the Primitive area and contiguous areas is about 12 million board feet (MMBF).

Douglas fir occurs between 8,300 feet and 10,500 feet. Most of these stands are on fairly steep, rocky slopes with shallow soil. Approximately 42 MMBF of Douglas fir timber is on the EIS area, in large dense stands, on north slopes, and small, more open stands on south aspects.

Small stands of lodgepole pine occur between 9,800 feet and 10,500 feet. These stands are on gentle slopes in the Indian Creek area. These lodgepole pine stands are found on the interface between the Douglas-fir and spruce-fir types. The EIS area contains only about 0.2 MMBF of lodgepole pine.

Extensive stands of Engelmann spruce and subalpine fir occur between 10,000 feet and 12,000 feet. Total volume is approximately 71 MMBF for the EIS area. Much of this type is in very dense stands on steep slopes. Many of the spruce-fir stands are on north and east aspects. Above 11,000 feet on the broad ridge flats, the spruce-fir type has evolved into nearly pure spruce. Stands of nonproductive Krumholtz Engelmann spruce occur at the upper elevation extremes of this type.

The aspen type occurs between 9,000 feet and 11,000 feet. Aspen is found on a wide variety of topographic conditions. Small aspen stands are intermixed with all of the other timber types in this area. Extensive aspen stands (2,000+ acres) are in Fish Canyon, along Middle Fork Powderhorn Creek, and in the southeast corner of the unit above Cebolla Creek. Evidence indicates that many of the aspen stands are the result of past fires. Most of the aspen stands have a substantial spruce-fir or Douglas fir understory. This type contains about 50 MMBF of timber.

A few scattered patches of bristlecone pine occur in the southeast corner of the existing primitive area, at approximately 9,500 feet elevation. See Table 3-6 for timber type acreages.

Past Harvesting History

There has been no significant timber cutting in the Powderhorn Primitive Area. Approximately 10 acres of one of the old cutting units in the Indian Creek drainage is within the existing primitive area boundaries (Gunnison Basin URA 1978). As for the contiguous lands with wilderness characteristics, there have been no recorded timber sales. In the past, however, there have been light cuttings in these contiguous lands for fuelwood, house timbers, and posts and poles.

Since 1973, the Powderhorn Primitive Area has been managed consistent with the Wilderness Act of 1964, which prohibits timber harvesting activities.

Protection

Insects. The insect problem in the existing primitive area and the contiguous lands with wilderness character is not major at present; however, a potential for significant problems exist. There is a light, but visible, endemic mountain pine beetle infestation in the ponderosa pine type with the northern portion of the existing primitive area showing the most damage. The Douglas fir timber type has a light, spruce budworm problem. There is no known spruce beetle infestation, but much of the spruce timber on the high ridge flats has a fairly high susceptibility according to the literature (Schmid and Frye 1977).

TABLE 3-6

TIMBER TYPE ACREAGES

Timber Type	Total Acreage			Less Than or Equal to 35% Slope			Greater Than 35% Slope		
	1	2	3	1	2	3	1	2	3
Aspen	9,000	10,060	7,980	3,720	4,150	3,460	5,280	5,910	4,520
Douglas-fir	5,580	8,340	3,660	2,730	4,700	1,860	2,850	3,640	1,800
Lodgepole pine	None	30	None	None	0	None	None	30	None
Spruce-fir	13,320	14,170	13,180	3,830	4,260	3,760	9,490	9,910	9,420
Ponderosa pine	2,220	2,420	2,060	770	890	610	1,450	1,530	1,450
Total (All Species)	30,120	35,020	26,880	11,050	14,000	9,690	19,070	21,020	17,190
Total (Commercial Species)	21,120	24,960	18,900	7,330	9,850	6,230	13,790	15,110	12,670

1. Existing Primitive Area plus 4,471 contiguous acres
2. Primitive area plus 9,660 acres of contiguous lands
3. Existing Primitive Area

Fire. Fire has had a significant role in the development of the present vegetation in the primitive area. Approximately 925 acres of forest land are understocked or nonstocked as a result of fires. This acreage is regenerating very slowly. Much of the aspen acreage is the result of fires. The burned areas, on which aspen established, are restocking in spruce and fir much faster than the areas without aspen (Gunnison Basin URA 1978).

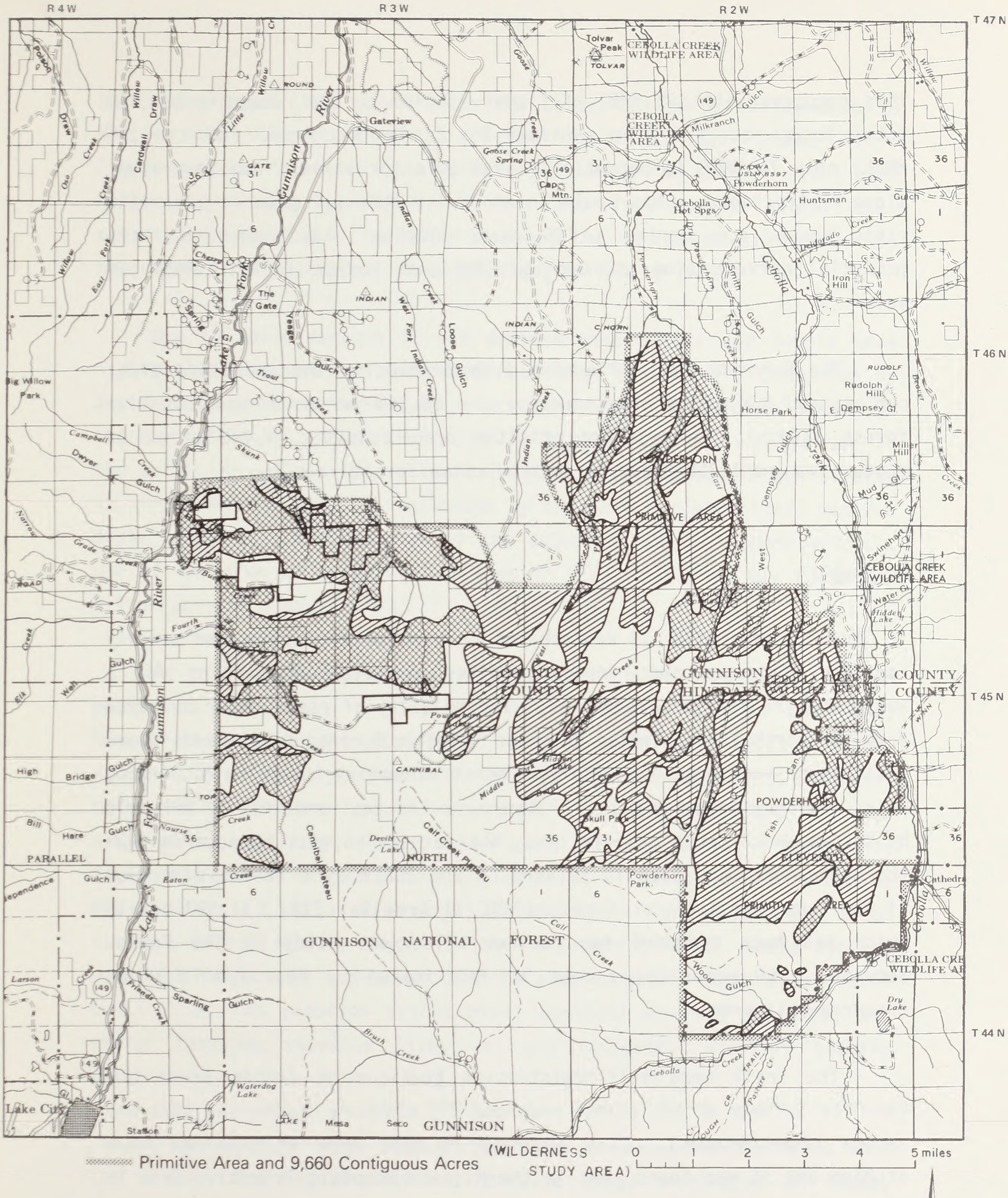
Timber-Volume

The existing Powderhorn Primitive Area and the contiguous lands with wilderness characteristics contain approximately 170 MMBF of timber. This volume is in the spruce-fir, ponderosa pine, lodgepole pine, Douglas fir, and aspen timber types. This timber is divided into areas (less than 35 percent slope) and areas where steep slopes (equal to or greater than 35 percent) impose limitations on timber harvest.

The 9,850 total acres of 35 or greater percent slopes would not be considered harvestable for present management purposes. As more advancement in harvest operation techniques develops in Colorado, more of these acres may be economically and environmentally feasible to harvest. For practical purposes, only the areas less than 35 percent slope will be dealt with here. Therefore, the following timber volumes will only refer to those 15,110 acres of timberland that at the present are feasible to harvest and of commercial species (see Map 7 for commercial species by slope class).

An average volume figure of 5,000 board feet per acre was obtained from the field plot data from the 1972 Extensive Forest Inventory. This figure was used to compute all of the volumes.

A total of approximately 125 MMBF of timber is present on the 35,020 acres of timberland in the primitive area plus the contiguous areas.



▨ Primitive Area and 9,660 Contiguous Acres (WILDERNESS STUDY AREA)

▨ Commercial Timber Species on < 35% Slope

▨ Commercial Timber Species on ≥ 35% Slope

Map 7 TIMBER RESOURCES

This compares with 295 MMBF of timber species on the remaining 109,660 total forest acres of the Gunnison Basin Planning Area. Of the 125 MMBF, only 76 MMBF is potentially available for harvest due to present slope restrictions. This would be about 1.0 MMBF per year on a sustain yield basis, considering a 120 year rotation. By comparison, the potential harvest from the Gunnison National Forest is 17.9 MMBF per year.

The Gunnison Basin Planning Area (excluding the primitive area) contains 82,030 acres of productive and 16,340 acres of nonproductive forest lands: The existing primitve area contains 24,470 acres of productive and 1,710 acres of nonproductive forest land.

Recreation

The EIS area with its expanses of alpine tundra plateaus and densely forested drainages and ridges, provides an excellent setting for a variety of recreation activities. The majority of users enter the area from the north at the Indian Creek or Ten-Mile Springs trail heads where trail head registration stations, horse unloading ramps, and parking areas are provided (see Map 1). Access on the east and west is possible by trails which cross private land, but permission must be aquired from the landowner. The area is abutted on the south by a roadless portion of the Gunnison National Forest (RARE II Area No. 218, 31,990 acres) which has been proposed for further wilderness study by the Forest Service. Non-motorized access is facilitated by four trails which traverse this area.

The trail head self-registration stations at Indian Creek and Ten-Mile Springs access points recorded 375 visitors during the 1978 use season (June-October). The accuracy of this type station has been studied and it was found that in the Mission Mountain Primitive Area in Montana about 35 percent of the visitors did not register (Lucas, Schreuder, James 1971), while in the Selway-Bitterroot Wilderness in Montana about 72 percent of the visitors did not register (Lucas 1975). The Powderhorn Primitive Area is patroled during the summer season by a backcountry ranger who observed that use levels were higher than registration indicated in 1979; however, the degree of difference was not quantifiable (personal communication, B. Pruitt 1979).

Due to these factors it was decided that actual use levels were higher than registration indicated, and that (based on a consensus by District recreation personnel), an additional 35 percent would be representative of actual visitation. This would bring visitor use in the primitive area to 506 visitors in 1978. The average length of stay in the primitive area, as indicated by the 1978 registrations, was 2.5 days. This figure multiplied by the adjusted visitor figure projects use of the area to 1,265 visitor days in 1978 (1 visitor day = use for all or part of a day).

The trail head registers have not been in place for a long enough period to accurately project the future rate of use in the area; however, Forest Service statistics indicate about an 8 percent annual growth rate nationally since 1969 for this type recreation use (Stankey, Baden 1977). Similar growth rates have also been indicated in other publications (Stankey, Lucas, Lime 1976; Stankey 1971). Using this figure the amount of use under the existing situation would amount to 862 visitors (2,155 visitor days) in the short term (1985) and 1,855 visitors (4,637 visitor days) in the long term (1995). These figures would be subject to adjustment due to such changing factors as travel costs (i.e., as gasoline prices rise, nonlocal use may decrease) and social carrying capacity (i.e., as use increases, visitors seeking solitude may choose other areas).

Residents of Colorado account for about 67 percent of the trips into the area. The majority of out-of-state usage originated in Texas, Oklahoma, and Kansas.

The trail head registration information indicated that the majority of users listed fishing and hiking as the primary activities during their visit. Activities such as hunting, nature study, and photography were also listed, but at a much lower frequency. Hunting in the Powderhorn Primitive Area may be somewhat underrepresented on the register since most of the hunting seasons occur after the summer patrol season and the registers are not maintained regularly. Additionally, much of the hunting use enters from the east where registers are not located.

Observations by Colorado Division of Wildlife personnel indicate that about 200 people hunted big game in or adjacent to the primitive area during the 1979 seasons with about half the use going in with outfitters (personal communication, P. Mason 1979). Conversations with outfitters and other individuals who hunted the area tend to substantiate this figure (personal communication, R. Wood, L. McGraw, E. Wiseman, B. McDonald, H. Clark, R. Holman, C. Finch 1979).

Facilities within the primitive area are limited to directional signing and about 40 miles of trails which connect most focal points in the area. The 4 mile trail from Indian Creek trail head to the Powderhorn Lakes receives the heaviest use as this provides a day hike into fishing in a scenic location. Much of the camping use also occurs at Powderhorn Lakes with multiple fire rings and scarcity of firewood becoming evident.

Fishing in the primitive area occurs at Upper and Lower Powderhorn Lakes, Hidden Lake, and Devils Lake with cutthroat and brook trout stocked by the Colorado Division of Wildlife. The beaver ponds along the forks of Powderhorn Creek also provide fishing for brook trout with the East Fork being the most accessible and receiving the most use.

Hunting occurs in the area for elk, deer, bear, and ptarmigan. The elk herd accounts for most of the hunting use with Fish Canyon Ridge and the Powderhorn Park receiving substantial use. The other game species present are hunted, but at much lower levels of use. The dense timber and rugged terrain probably tend to limit hunting in portions of the area.

The lands adjacent to the primitive area which are being considered under the various alternatives are not used substantially for recreation purposes. The lack of trails and surrounding private land limit access to these portions with the exception of the Dempsey Park area on the north end of Fish Canyon Ridge. This portion is accessible by four wheel-drive vehicle and is used during the hunting season as a take-off point for elk hunting in the primitive area. These routes are also occasionally used for pack trips into the primitive area from guest resorts along Cebolla Creek.

Private lands adjacent to the primitive area along the Lake Fork of the Gunnison and Cebolla Creek are used for ranching and increasingly for recreational resorts. These resorts use the primitive area and other public lands to provide the land base needed for activities such as hiking, hunting or horseback riding.

Wilderness Values

The Powderhorn (40,480 acres) was designated in August of 1973, as a Primitive Area due to its undeveloped nature and outstanding recreation potential. Since this time it has been managed consistent with the BLM Primitive Area Management Policy (BLM 6221.06) and the Wilderness Act of 1964. Upon its passage in 1976, the Federal Land Policy and Management Act (Section 603(a)) required that all BLM administered lands formally identified as natural or primitive be reviewed as to their wilderness suitability in accordance with Section 3(d) of the Wilderness Act of 1964. This was completed during the summer of 1978 for the Powderhorn Primitive Area and contiguous lands using the BLM Wilderness Inventory

Handbook and the Draft Procedures for Wilderness Review of Previously Designated Primitive and Natural Areas as guiding documents. The primitive area and 9,660 contiguous acres (see Map 1) for a total of 50,140 acres were determined to meet the criteria of:

1. Size. At least 5,000 contiguous roadless acres of public land is of sufficient size as to make practicable its preservation and use in an unimpaired condition.

2. Naturalness. Generally appears to have been affected primarily by the forces of nature, with the imprint of man's work sustantially unnoticeable.

3. Solitude/Primitive Recreation. Offers outstanding opportunities for solitude or a primitive and unconfined type of recreation.

4. Supplemental Values. May also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

A summary of the findings are presented here: The intensive inventory is included in Appendix RE-1.

Size/Ownership. The majority of this unit (40,480 acres) is included in the Powderhorn Primitive Area which is an Instant Study Area (ISA) causing it and contiguous lands (77,080 acres total) to receive an intensive inventory in the summer of 1978. During this inventory 9,920 acres were determined unnatural in character due to timber harvests, mineral exploration pits, and contour furrowing. The deletion of the unnatural section and adjacent private land left the northern portion of the unit with a very irregular boundary of four finger-like extentions often less than a mile in width. The confining nature of the boundary and short cone to perimeter distances within the fingers were judged to prevent outstanding opportunties for solitude or primitive and unconfined recreation, causing an additional 17,020 acres to be deleted from the area. After these boundary adjustments, the unit consists of 50,140 acres of public land which is suffient to satisfy the size criteria. Additionally, contiguous to the unit on the south is the FS RARE II Area No. 218 (31,990 acres) which is being further studied for wilderness potential. The unit is surrounded by a mixture of public, private, state, and national forest systems lands.

Naturalness. The Powderhorn area is characterized by relatively level alpine plateaus giving way to steep sided canyons. The elevations range from 12,664 feet on Calf Creek Plateau at the south end to about 8,600 feet along Powderhorn Creek at the north end. Vegetation generally follows the elevations with alpine tundra, spruce-fir forests, ponderosa pine parks, and sagebrush-grassland being present. The imprints of man within the unit are generally widely scattered and have a limited impact due to vegetation and topographic screening. The imprints include four old log cabins in varying stages of deterioration, about 12 miles of ways which are revegetating, a small windmill, a 10 acre timber cut, and range projects such as fences and stock ponds. The imprints within the unit were determined to be substantially unnoticeable with the area primarily affected by the forces of nature.

Opportunities for Solitude. The large size of the area (50,140 acres) with its rugged terrain, caused by steep sided drainages radiating outward from Calf Creek Plateau, provides numerous locations where opportunities for solitude would be present. The dense stands of spruce, fir, and aspen found along these drainages further enhance opportunities for solitude by dividing the area into smaller viewsheds allowing seclusion. The higher elevations on Calf Creek and Cannibal plateaus offer sweeping vistas of the surrounding mountainous landscape, projecting a feeling of vastness which enhances solitude. Due to these factors outstanding opportunities for solitude are present in the area.

Opportunities for Primitive and Unconfined Recreation. The blocklike configuration and substantial acreage allow for the unconfined movement of recreationists, particularly over the alpine tundra portions of the area. These areas provide excellent locations for hiking or hoseback riding during the summer and cross-country skiing/snow shoeing during the winter. Lakes in the area and the forks of Powderhorn Creek provide fishing opportunities as well as scenic locations for camping. The varied wildlife of the area, including beaver, ptarmigan, and elk, provide ample viewing and hunting possibilities. These factors contribute to and provide outstanding opportunities for primitive and unconfined recreation.

Supplemental Values. In addition to the wilderness characteristics summarized above the Powderhorn area includes some outstanding and unique supplemental values which add to the wilderness resource:

1. Ecologically, the Powderhorn area encompasses one of the largest and least disturbed, relatively flat alpine tundra areas in the contiguous United States. This ecosystem includes the northern parts of Cannibal and Calf Creek Plateaus.

2. Geologically, the area consists of Tertiary volcanic deposits, both lava flow and ash flow tuff, in some areas believed to be five thousand feet in thickness. Alpine glaciation changed the feature of the landscape by creating cirque basins, glacial tarns, morainal deposits and lakes, U-shaped valleys and rock glaciers.

3. Scientific and educational values exist with opportunities to study and analyze alpine and subalpine ecosystems, and glacial and igneous geology and geomorphology. The Powderhorn area includes a large elk breeding ground and peripheral usage by Rocky Mountain bighorn sheep. In the alpine tundra are found

ptarmigan as well as a large variety of alpine plant types such as moss campion (Silene acaulis), alpine forget-me-not (Eritrichium elongatum), and Jacobs ladder (Polemonium pulcherrimum).

4. Scenic values are very high due to a combination of diverse vegetation types and topographic landforms which are relatively unique within the region. Man-made features are lacking or are harmonious with the natural landscape. The Powderhorn offers outstanding views of the San Juan Mountains. These adjacent lands, managed largely by the Forest Service, include several wilderness or proposed wilderness areas.

5. Historically, the Powderhorn area was utilized by the Ute Indians as a summer hunting ground, as were the majority of the San Juan Mountains. The Powderhorn is believed to be the general area of the infamous Alferd E. Packer's cannibalistic "feast" of five men in the winter of 1874. Some old cabins or remnants are found within the Powderhorn and, although they enhance the appeal of the wilderness resource, their historical value is undetermined at this time.

Economics

Economic use of the Powderhorn area has been very limited. The remoteness of the EIS area from centers of population has placed very little demand upon the area's resources. In the past, livestock grazing and recreation have been the most important uses of the area. Livestock use of the area is proposed to be managed in accordance with the Gunnison Basin Management Framework Plan and would not change for any alternative being considered. Recreation use of the area, in 1978, had a total value of $23,460 and a value per visitor day of $18.47. Appendix SE-1 shows how these values were derived. No timber has been harvested in the proposed wilderness area other than the previously discussed 10 acre tract. However, the area does have developable timber resources. The Forestry section shows that a sustained yield of 0.9 MMBF per year could be produced in the present primitive area. At $40 per MBF, this timber would have a stumpage value of $36,000 annually (1979 dollars). Areas contiguous to the existing primitve area could produce 0.1 MMBF per year with a value of $4,000.

As noted in the Geology and Minerals section, preliminary reports indicate no minerals in economic concentrations in the EIS area, other than possibly certain industrial minerals, for which no data are available.

Social Conditions

Locally there is sentiment both in favor of and opposed to additional wilderness areas. Through the public participation process BLM has received a great deal of comment on both sides of the issue. There is a very vocal group that opposes further wilderness designation and view it as a threat to the economic stability of the local communities. This group feels that since a great percentage of the land in Gunnison and Hinsdale counties is administered by the federal government, further wilderness designations would weaken the area's economic base by taking the land out of some forms of production. There are also local groups who see wilderness designation as necessary to preserve areas in a natural state for their scenic and scientific values.

CHAPTER 4

ENVIRONMENTAL CONSEQUENCES

IMPACT ANALYSIS ASSUMPTIONS

Assumptions

This chapter analyzes the environmental consequences that would be caused by implementation of the proposed action or one of the alternatives. In order to provide a standard framework for impact analysis and comparison among alternatives, the folliwng assumptions were used.

1. The short term is considered to be between submission of the wilderness report to congress (1980) and 1985, since that is the period during which congress could act on the proposal. The long term was set at 1995, since the environmental trends of whatever course of action is chosen would appear by that time.

2. BLM will have the funding and workforce to implement the course of action chosen.

3. Livestock grazing use on allotments within the primitive area and contiguous lands will be determined through the Gunnison Basin Livestock Grazing EIS (which includes the primitive area). None of the proposed wilderness alternatives would affect the stocking levels within the Primitive area or the contiguous lands.

4. If the primitive area (and alternative tracts of contiguous lands) is designated wilderness, it would be managed in accordance with the Wilderness Act of 1964 and the Federal Land Policy and Management Act of 1976.

Energy Requirements and Conservation Potential

Implementation of any alternative would require motor vehicle fuel for administration of the area. However, the amount would not be different for any alternative selected, and no conservation potentials are evident.

Format

Impacts in this chapter are discussed by alternative by resource element. That is, all of the resources that would be affected by an alternative are discussed under the heading of that alternative.

Non-Affected Resources

The climate, air quality, geology, and topography of the EIS area would not be impacted by any of the alternatives. Therefore they will not be discussed in any impact section. Also, the visual resources would not be affected by any of the alternatives except that proposing use and development.

DESIGNATION OF POWDERHORN PRIMITIVE AREA AND 4,471 CONTIGUOUS ACRES -- IMPACTS

Impacts on Minerals

The Powderhorn Primitive Area is presently under a protective withdrawal which withdraws 40,480 acres from disposition under the mining laws, but not from leasing under the mineral leasing laws. The 4,471 acres of contiguous lands are presently open to appropriation under the mining laws and to leasing under the mineral leasing laws.

Designation as a Wilderness Area could allow mineral entry under the mining law and leasing under the mineral leasing laws, subject to the provisions of the Wilderness Act, until midnight, December 31, 1983. After that date, the area now known as the Powderhorn Primitive Area plus the 4,471 acres of contiguous lands would be withdrawn from all forms of entry under the mining law and from leasing under the mineral leasing laws, subject to valid existing rights as of January 1, 1984.

Impacts on Soils

Short and long-term erosion would remain essentially unchanged by this alternative in the Powderhorn Primitive Area. The projected increased recreational use, especially near Powderhorn Lakes or other desirable locations could result in increased erosion and soil compaction, depending upon the degree of usage and soil or other site characteristics. The soils around Powderhorn Lakes have moderate to severe limitations for camping due to steep slopes, stoniness, and slow water percolation. If additional trails are built they could increase soil erosion depending upon their design and location.

On the 4,471 acres of contiguous lands, the elimination of vehicular use on the two ways in the Dempsey Park area would reduce erosion there. Attempts to rehabilitate these ways, which involved disturbing the soil adjacent to the ways, might increase short-term erosion. However, long-term erosion would be decreased by creating waterbars across steep, eroding grades on these ways. Such erosion creating activities as road building and logging would be restricted from the 4,471 contiguous acres also.

Impacts on Water Resources

Assuming the projected increase in recreationists in the short and-long term would result in heavy and frequent use of campsites, primarily around the Powderhorn Lakes, the hydrologic condition of these areas is expected to degrade as has been seen in other wilderness areas. The increase in recreational use would compact soils, increasing the amount of surface runoff and soil loss. As a result, tree roots could become exposed, reducing the trees' vigor and the amount of overstory vegetation, which would be compounded by the collection of firewood. By slightly decreasing the amount of vegetation cover and slightly increasing the amount of surface runoff, a small increase in sediment production would be expected.

The increase in recreation activities around or in close proximity to surface water would result in increased fecal pollutants. Varness et al. (1978) found that recreational activities in an area with no sanitary facilities resulted in an increase of fecal bacteria indicator densities. The study suggested that potential health hazards exist in the watershed during periods of human use.

To some extent, these impacts would occur whether or not the area was designated wilderness. The difference would be in degree of use with designation, which would lead to degree of impact.

Impacts on Vegetation

The vegetation impacts due to this alternative would be negligible. A very slight increase in trampling of vegetation by visitors to the area may occur, primarily around existing trails and at campsites at Powderhorn, Hidden, and Devils lakes.

Impacts on Terrestrial Wildlife

With implementation of this alternative, there would be no significant impacts in the short term to terrestrial wildlife species. However, in the long term, there could be some unquantifiable impacts to wildlife if visitor use increases as expected. Some animal populations could decline (primarily big game such as elk) as a result of potential increases in noise and decreases in space, both due to the possible increases in visitors and visitor days. Some animal populations, however, could increase as a result of decreases in other animal populations.

Impacts on Aquatic Wildlife

Table 4-1 lists the estimated stream miles that would to be included under the various alternatives. Since the No Action Alternative would be the same as the existing environment, there is no separate column in the table which describes the present situation. The number of miles of aquatic/riparian habitat that would be affected by the alternatives ranges from 51.5 to 63.2 miles. A breakdown of the miles impacted can be referred to under each alternative.

It is estimated that under this alternative, there would be an additional 6.3 miles of aquatic/riparian habitat included in the designated wilderness area (Table 4-1). These additional miles would

TABLE 4-1

PORTIONS (Miles) OF MAJOR DRAINAGES INCLUDED IN THE EIS AREA 1/

	Approximate Number of Miles Included in each Alternative				
Stream Name	Existing	A	B	C	D
East Fork Powderhorn	11.6	11.6	11.6	11.6	11.6
Mid Fork Powderhorn	10.2	10.2	10.2	10.2	10.2
West Fork Powderhorn	9.1	9.1	9.1	9.1	9.1
Phelps Cabin Creek	1.9	1.9	1.9	1.9	1.9
Burnt Creek	4.5	4.5	4.5	4.5	4.5
Fish Canyon	3.2	3.2	3.2	3.2	3.2
Wood Gulch	2.3	2.3	2.3	2.3	2.3
Devils Creek	3.0	3.0	3.0	3.0	3.0
Fourth of July Creek	3.8	4.5	4.5	4.5	3.8
Trout Creek	1.9	1.9	1.9	3.9	1.9
Big Buck Creek	NA 2/	0.4	NA	2.8	NA
Hells Canyon	NA	NA	NA	1.5	NA
Skunk Creek	NA	NA	NA	1.5	NA
Indian Creek	NA	NA	NA	0.3	NA
Crystal Creek	NA	1.4	NA	1.4	NA
West Dempsey Gulch	NA	3.8	NA	1.8	NA
Total	51.8	57.8	52.5	63.2	51.5

1/ Mileage based on USGS quad maps.
2/ NA = Not affected.
3/ This alternative is the same as the present situation.

A Designation of Powderhorn Primitive Area and 4,471 Contiguous Acres - Study Phase Decision.

B Designation of Powderhorn Primitive Area.

C Designation of Powderhorn Primitive Area and 9,660 Contiguous Acres - All lands with wilderness character.

D Use Alternative

include a small portion of the West Fork Powderhorn Creek, parts of Fourth of July Creek, Dempsey Gulch, and Crystal Creek. It is anticipated that the number of miles in good to excellent condition would remain the same under this alternative. There would be an additional 0.7 mile of stream habitat in the fair category and 5.6 additional miles considered as part of the existing data void.

Under this alternative there would be a greater probability that the DOW fish stocking program may be impacted than if there were no wilderness designation. The magnitude of this impact however is unknown at this time.

Impacts on Livestock Grazing

As noted on Table 3-4, this alternative would involve approximately 37,170 acres administered for livestock grazing and 2,002 AUMs. Allotments or portions of allotments within the existing primitive area would not be affected. However, a 3,120 acre portion of the Powderhorn AMP allotment that is outside the existing primitive area but included under this alternative would be restricted from motorized equipment and vehicles. This could increase the time and man power required to maintain two springs on a 5 to 10 year schedule in the Powderhorn AMP Allotment.

Impacts on Cultural Resources

This alternative would have both beneficial and adverse impacts to any cultural resources present in the area. The cultural values in the area designated would be protected by their isolation from surface disturbing activities and thereby left in a pristine condition. They would also be available for future study and evaluation and these are high altitude sites which makes them important to preserve.

While most impacts would be beneficial there may be some adverse impacts associated with designation. Concentrations of hikers and campers on trails and in camping areas may cause trampling of the resource and vandalism may occur. Vandalism is probably the most detrimental of the adverse impacts. The removal of objects from their context is the destruction and loss of information which may be valuable in reconstructing and understanding past land-use activities. Cultural resources are a finite nonrenewable resource that once disturbed cannot be replaced.

Vandalism and trampling are likely to occur despite precautions that may be taken to mitigate and avoid such actions. Those impacts which cannot be avoided would constitute an irreversible and irretrievable loss of cultural values and scientific data as well as possible interpretive values.

Although some loss is likely, the majority of cultural values would be protected by their isolation. Inventory and assessment of the cultural values would be a gain to scientific knowledge and the long-term isolation and protection of the sites from surface disturbing activity would be a benefit as future researchers and recreationists would be able to see and/or study these undisturbed values.

Impacts on Forestry Resources

There would be several forestry-related impacts if the Powderhorn Primitive Area and 4,471 acres of the contiguous lands with wilderness character were designated as a wilderness area. First is the consideration of the actual and potential amount of timber that would be removed from the timber base of the Gunnison Basin Resource Area. The primitive area is already being managed under the Wilderness Management Guidelines, but the wilderness designation would implement restrictive management on an additional 4,471 acres thus creating a long-term impact on the timber resource. This would mean that 6 MMBF timber would be withdrawn (see Table 4-2), and all the future growth would also be withdrawn which could be as high as 50 MBF per year. There would be timber losses due to insect-damaged and diseased trees, normal mortality, blowdown of decadent trees, and wildfire. The dead and dying trees could not be salvaged for timber products (posts and poles, firewood, lumber) under the wilderness designation.

On a regional basis, the withdrawal of this amount of timber would not affect the demand for timber, since it is very small (.05 MMBF per year possible versus 17.92 MMBF per year possible from the local market area). Also, this timber lies in rugged terrain and would require extensive road building for harvest.

Within the 4,471 contiguous acres proper management, which would improve and increase reproduction, is restricted under wilderness designation. The ponderosa pine stands are currently understocked, and there is little natural reproduction establishing under these stands. Many of the spruce-fir and pure spruce stands are overstocked, and growth is slow with many stands being at a point of stagnation. In such a case, the stands could deteriorate and slowly die back to a point of negative growth. Not only could the timber values be affected, but the aesthetics could also be significantly changed.

Impacts on Recreation

The designation as wilderness of the Powderhorn Primitive Area and 4,471 acres of contiguous lands could increase visitor use of the area. The increased exposure the area would receive due to public comment and news media coverage during the decision making process, as well as through outdoor recreation magazines and wilderness guide books, could cause some additional visitation. While little research has been completed on the degree of use change, it was felt that an additional 10

TABLE 4-2

VOLUME AND ACREAGE OF COMMERCIAL SPECIES

	Volume 1/ (million board feet)				Acreage		
	Total	GT=35% Slope	LT35% Slope	ASY 2/ LT35%	Total	GT=35% Slope	LT35% Slope
Existing Primitive Area	95	31	64	0.90	18,900	6,230	12,670
Dempsey Park, Powderhorn Creeks confluence, and Fourth of July Creek (4,471 acre contiguous area)	11	5	6	0.05	2,220	1,100	1,120
Ten Mile Road, Indian Creek Ridge, and Skunk Creek-Hell Canyon (additional 5,189 acre contiguous area)	19	13	6	0.05	3,840	2,520	1,320
Total	125	49	76	1.00	24,960	9,850	15,110

1/ Data derived from the 1972 Extensive Forest Inventory.
2/ ASY: Annual Sustained Yield.

LT Less than.
GT= Greater than or equal to.

percent use for a 5 year period during the decision making process and carrying over into the first years as wilderness would represent the upper limits of increased use (based on a consensus of District recreation personnel). After this 5 year period, use would continue to increase at the projected 8 percent per year figure with the additional initial increase causing the use to increase faster than that projected in Chapter 3. Using this rate of increase the short term (1985) would experience an additional 484 visitors while the long term (1995) would experience an additional 1,044 visitors. Assuming that the length of stay would remain constant with the 1978 average the area would receive an extra 1,210 visitor days in 1985 and 2,610 visitor days in 1995. These figures would be affected by such factors as travel costs and the areas social carrying capacity (Chapter 3).

This increase in use of the area would have an effect on users in the long and short term. Focal points such as the lakes could become crowded causing some users to move to another location or forego trips into the area.

The quality of hunting and fishing in the area over the short and long term would depend to a great extent on management actions taken by the Colorado Division of Wildlife (DOW). The number of permits issued for this Game Management Unit could be adjusted to maintain recreation days or game populations. Fish populations in the lakes are now maintained through stocking programs. The DOW could increase stocking to provide for the additional fishing pressure and maintain fishing quality.

Off-road vehicles, snowmobiles, and 4-wheel drive activities would not be permitted on the 4,471 acres adjacent to the primitive area; however, this should not be a substantial impact due to the large amount of land available for these activities in the region. The primitive area has been closed to motorized traffic since its designation so no additional impacts would occur on this portion.

Wilderness Values

The designation as wilderness would have a short and long-term benefical impact on the wilderness values present in the area by providing additional protection. The portion within the primitive area is now protected from man-caused impairments by an administrative designation subject to the policies of the BLM. Designation as wilderness is decided only by Congress, withdrawal of this designation would also require congressional action. This protection would also be extended to the 4,471 acres of adjacent land proposed under this alternative, thus retaining the wilderness values present.

The 5,189 acres of public land which were determined to contain wilderness values but not considered for designation under this alternative would be managed for multiple use. Dependent on what activities would occur, the wilderness values could be lost on all or a portion of these lands.

Impacts on Economics

Under this alternative recreation use of the Powderhorn Area would increase to 3,365 visitor days annually in the short term with a value of $62,150; this would be an increase of 1,210 visitor days and $22,350 above use of the area without wilderness designation. In the long-term use of the area would be greater by 2,610 visitor days. Value of this greater use would be $48,210 to recreation oriented portions of the local economy.

Under this alternative society would forego an additional 0.05 MMBF of timber. The annual value of this production at $40 per MBF would be $2,000.

Impacts on Social Conditions

Transfer of private lands inside the proposed boundaries of the wilderness area may be viewed by some people as necessary for maintenance of the integrity of the area. However, removal of land from private ownership is opposed by local citizens, especially those of Hinsdale County where over 10 percent of the private land has been purchased and removed from the tax rolls since 1957. Losses in annual tax revenue that would result from such a land transfer would amount to only $35 in Hinsdale County and $4 in Gunnison County, both of which would be insignificant portions of the counties' total property tax revenues. However, such a move would be viewed by local residents as one more step in eroding away their limited tax base by federal and state governments.

There are three methods by which private inholdings may be obtained by the federal government, purchase, exchange, or acquisition without owner consent. Of the three methods exchange would be viewed most favorably by local people since land of similar value would be transferred from public to private ownership and thus not affect the tax rolls.

Adverse Impacts

Should the proposed action be implemented, adverse impacts would occur to some resources; certain resources would be impacted by increased visitor use, while others would be impacted by restrictions on their use.

For example, the projected increases in visitor use could lead to more trampling of vegetation and trail use, which would increase erosion. Additional people hiking near lakes and streams could increase the possibilities of fecal pathogens entering the local waters, which could be a health hazard. This increased human activity could disturb wildlife, particularly elk, and eventually lead to population declines.

The wilderness designation, and its projected resultant visitor use increases could lead to crowding in parts of the area, which would decrease its values for solitude and wilderness enjoyment.

Those physical use activities restricted by the wilderness designation (timber and mineral production and motorized recreation) would be adversely affected by the loss to their usable resource base. Such losses would apply only to the 4,471 contiguous acres, since the existing primitive area is already restricted from such uses.

The time, effort, and thus costs required to administer livestock grazing allotments and maintain rangeland improvements on the 4,471 contiguous acres could increase as a result of wilderness designation.

If the private land inholding were acquired without the owners consent, it could cause an adverse impact to local social conditions.

Short Term Use vs Long Term Productivity

If the proposed action were implemented, some short and long-term impacts and resource tradeoffs would occur. The use of some resources would be foregone in order to preserve the integrity of others.

In the short term and in the long term, visitor use is projected to increase. This increased use could lead to increases in vegetation trampling, erosion, and health hazards due to fecal pathogens in the water supply. The losses in opportunities for soltude and losses in wildlife populations would be short and long-term impacts.

The losses (on the 4,471 acres of contiguous lands only) in some resource uses (timber, minerals, ORVs) would be short and long-term impacts, as would the increases in livestock grazing management costs.

Overall, the resource tradeoffs (on the 4,471 acres of contiguous lands) would involve foregoing the use of some resources (timber, minerals, ORVs) in order to enhance the use of other resources (wilderness character and primitive recreation and scenic values).

Irreversible/Irretrievable Commitment of Resources

There would be no irreversible or irretrievable committtments of resources under this alternative.

DESIGNATION OF POWDERHORN PRIMITIVE AREA -- IMPACTS

Conditions in most resources within the existing primitive area would not change appreciably with wilderness designation, since the area is presently managed under wilderness guidelines. Impacts to most resources would be slight, and would be due to the projected increases in visitor use as discussed under the proposed action. Since the increases in visitor use under this alternative would be the same as those projected for the proposed action impacts should be similar.

Transfer of private lands inside the proposed boundaries of the wilderness area may be viewed as necessary for maintenance of the integrity of the area. However, removal of land from private ownership is opposed by local citizens, especially those of Hinsdale County where over 10 percent of the private land has been purchased and removed from the tax rolls since 1957. Losses in annual tax revenue that would result from such a land transfer would amount to only $35 in Hinsdale County, an insignificant portions of the county's total property tax revenues. However, such a move would be viewed by local residents as one more step in eroding away their limited tax base by federal and state governments.

There are three methods by which private inholdings may be obtained by the federal government; purchase, exchange, or acquisition without owner consent. Of the three methods exchange would be viewed most favorably by local people since land of similar value would be transferred from public to private ownership and thus not affect the tax rolls.

On the 9,660 acres of contiguous lands that would not be designated wilderness under this alternative, multiple use management would continue. This acreage would remain open to such uses as mineral and timber development and ORV use. However, these lands have been open to such uses for a number of years, and have retained their wilderness characteristics. No significant imprints of man have been recorded to date, and projections of potential future uses are not possible.

Adverse Impacts

There would be no adverse impacts to the existing environment under this alternative.

Short Term Use vs Long Term Productivity

In the short term as well as the long term, the conditions and trends in individual resources discussed under the existing environment would continue.

Irreversible/Irretrievable Commitment of Resources

There would be no irreversible or irretrievable commitments of resources under this alternative.

USE ALTERNATIVE -- MAXIMUM DEVELOPMENT, PRODUCTION, AND USE OF ALL RESOURCES -- IMPACTS

Under this alternative, all resources within the 50,140 acre EIS area (primitive area plus all contiguous areas) could be impacted within the bounds of normal multiple use environmental constraints. Such impacts are not quantifiable at present, but would be evaluated at the time when multiple use activities were proposed.

The wilderness values of the area could be lowered if road building, timber and mineral production, ORV use, and other physical uses occurred. Visitor use would increase but at a lower rate than under the proposed action and the type of visitor use could shift from wilderness, backcountry oriented to ORV and road oriented uses.

Adverse Impacts

Adverse impacts could occur to the entire area's wilderness values, as well as to its soils, vegetation, water resources, wildlife, visual resources, and cultural resources.

Short Term Use vs Long Term Productivity

If the impacts discussed under this alternative occurred, they would be both short and long term, and would involve trade offs in the lowering of wilderness values for the gains in forest, mineral, and ORV uses.

Irreversible/Irretrievable Commitment of Resources

Should the development and uses discussed under this alternative occur, irreversible trends would be set in place, and the lowering of wilderness values would be irretrievable.

NO ACTION -- IMPACTS

This alternative would maintain the same management philosophies which presently exist within the primitive area and on the 9,660 contiguous acres. Conditions are not expected to change from the present situation.

Within the primitive area, the wilderness values would be maintained, and increases in visitor use, beyond the existing rate of increase, are not anticipated. Exploration and development of leasable minerals would be permitted, however, any surface activities would be restricted by management guidelines.

On the 9,660 acres of contiguous lands that would not be designated wilderness under this alternative, multiple use management would continue. This acreage would remain open to such uses as mineral and timber development and ORV use. However, these lands have been open to such uses for a number of years, and have retained their wilderness characteristics. No significant imprints of man have been recorded to date, and projecting potential future uses would be conjectural.

Adverse Impacts

Mineral, forest, and ORV activities could impair the wilderness values of the 9,660 acres of contiguous land, however, the timing and magnitude of these impacts are impossible to predict.

Short Term Use vs Long Term Productivity

Mineral, forest, and ORV activities could reduce the wilderness values over the long term, within the 9,660 contiguous acres.

Irreversible and Irretrievable Commitment of Resources

Within the 9,660 acres of contiguous land, mineral, forest, and ORV activities, if they occurred, would represent an irretrievable commitment of wilderness values. This loss would occur because human imprints would remain and would thus reduce wilderness values.

There would not be any irreversible or irretrievable commitment of resources within the primitive area.

DESIGNATION OF ALL LANDS WITH WILDERNESS CHARACTER -- IMPACTS

Impacts Similar to the Proposed Action

Under this alternative, impacts to soils, water resources, vegetation, terrestrial wildlife, aquatic wildlife, and cultural resources would be similar to those described under the proposed action. Any differences due to the larger amount of land designated as wilderness would be unquantifiable.

Impacts on Minerals

The Powderhorn Primitive Area is presently under a protective withdrawal which withdraws 40,480 acres from disposition under the mining laws, but not from leasing under the mineral leasing laws. The 9,660 acres of contiguous lands are presently open to appropriation under the mining laws and to leasing under the mineral leasing laws.

Designation as a Wilderness Area could allow mineral entry under the mining law and leasing under the mineral leasing laws, subject to the provisions of the Wilderness Act, until midnight December 31, 1983. After that date, the area now known as the Powderhorn Primitive Area plus the 9,660 acres of contiguous lands would be withdrawn from all forms of entry under the mining law and from leasing under the mineral leasing laws, subject to valid existing rights as of January 1, 1984.

Impacts on Livestock Grazing

This alternative would involve approximately 40,929 acres administered for livestock grazing and 2,251 AUMs. Allotments or portions of alltoments within the existing primitive area would not be affected. However, use of motorized vehicles or equipment to maintain facilities would be restricted in allotments within the 9,660 contiguous acres. There are six springs in the Yeager Gulch Allotment, .75 mile of fence in the Yeager Gulch and Ute Trail allotments, and .75 mile of fence in the Hells Canyon Allotment that would be affected. The time and man power spent to maintain these facilities could increase.

Impacts on Forestry Resources

There would be several forestry-related impacts of concern if the Powderhorn Primitive Area and the 9,660 acres of contiguous lands with wilderness character were designated as a wilderness area. First is the consideration of the actual and potential amount of timber that would be permanently removed from the timber base of the Gunnison Basin Resource Area. The primitive area is already being managed under the Wilderness Management Guidelines, but the wilderness designation would add 9,660 acres to this restrictive management classification, thus, creating a long-term impact on this timber resource. This would mean that an additional 12 MMBF of timber would be foregone. The future growth would be lost which could be as high as 100 MMBF per year. There would be timber losses due to insect-damaged and diseased trees, normal mortality, blowdown of decadent trees, and wildfire. The dead and dying trees could not be salvaged for timber products under the wilderness designation.

On a regional basis, the withdrawal of this amount of timber would not affect the demand for timber, since it is very small (.10 MMBF per year possible versus 17.92 MMBF per year possible from the local market area. Also, this timber lies in rugged terrain and would require extensive road building for harvest.

Within the 9,660 contiguous acres management, to improve and increase reproduction, would be restricted under wilderness designation.

The ponderosa pine stands are currently understocked and there is little natural reproduction establishing under these stands. Many of the spruce-fir and pure spruce stands are overstocked, and growth is slow with many stands being at a point of stagnation. In such a case, the stands could deteriorate and slowly die back to a point of negative growth. Not only could the timber values be affected, but the aesthetics could also be significantly changed.

Impacts on Recreation

The designation as wilderness of the Powderhorn Primitive Area and 9,660 acres of contiguous lands could increase visitor use of the area. The increased exposure the area would receive due to public comment and news media coverage during the decision making process, as well as through outdoor recreation magazines and wilderness guide books, could cause additional visitation. While little research has been completed on the degree of use change it was felt that an additional 10 percent use for a 5 year period during the decision making process and carrying over into the first years as wilderness would represent the upper limits of increased use (based on a consensus of District recreation personnel). After this 5 year period, use would continue to increase at the projected 8 percent per year figure with the additional initial increase causing the use to increase faster than that projected in Chapter 3. Using this rate of increase the short term (1985) would experience an additional 484 visitors while the long term (1995) would experience and additional 1,044 visitors. Assuming that the length of stay would remain constant with the 1978 average the area would receive an extra 1,210 visitor days in 1985 and 2,610 visitor days in 1995. These figures would be subject to adjustment due to changing factors such as travel costs and the areas social carrying capacity.

This increase in use of the area would have an affect on users in the long and short term. Focal points such as the lakes could become crowded causing users to move to another location or forego trips into the area.

The quality of hunting and fishing in the area over the short and long term would depend to a great extent on management actions taken by the Colorado Division of Wildlife (DOW). The number of permits issued for this Game Management Unit could be adjusted to maintain recreation days or game populations. Fish populations in the lakes are now maintained through stocking programs. The DOW which could increase stocking to provide for the additional fishing pressure and maintain fishing quality.

Off-road vehicles, snowmobiles, and 4-wheel drive activities would not be permitted on the 9,660 acres adjacent to the primitive area; however, this should not be a substantial impact due to the large amount of land available for these activities in the region. The primitive area has been closed to motorized traffic since its designation so no additional impacts would occur on this portion.

Wilderness Values

The designation as wilderness would have a short and long term benefical impact on the wilderness values present in the area by providing additional protection. The portion within the primitive area is now protected from man-caused impairments by an administrative designation subject to the policies of the BLM. Designation as wilderness is decided only by Congress; withdrawal of this designation would also require congressional action. This protection would also be extended to the 9,660 acres of adjacent land proposed under this alternative, thus retaining the wilderness values present.

Impacts on Economics

Recreation use of the area would be the same for this alternative as under the proposed action. Recreation values would increase by $22,350 in the short term and $48,210 in the long term.

Under this alternative society would forego potential timber production of 0.1 MMBF. The value of this annual loss would be $4,000.

Impacts on Social Conditions

Transfer of private lands inside the proposed boundaries of the wilderness area may be viewed by some people as necessary for maintenance of the integrity of the area. However, removal of land from private ownership is opposed by local citizens, especially those of Hinsdale County where over 10 percent of the private land has been purchased and removed from the tax rolls since 1957. Losses in annual tax revenue that would result from such a land transfer would amount to only $35 in Hinsdale County and $100 in Gunnison County, both of which would be insignificant portions of the counties' total property tax revenues. However, such a move would be viewed by local residents as one more step in eroding away their limited tax base by federal and state governments.

There are three methods by which private inholdings may be obtained by the federal government; purchase, exchange, or acquisition without owner consent. Of the three methods exchange would be viewed most favorably by local people since land of similar value would be transferred from public to private ownership and thus not affect the tax rolls.

Adverse Impacts

Should the proposed action be implemented, adverse impacts would occur to some resources, certain resources would be impacted by increased visitor use, while others would be impacted by restrictions on their use.

For example, the projected increases in visitor use could lead to more trampling of vegetation and trail use, which would increase erosion. Additional people hiking near lakes and streams could increase the possibilities of fecal pathogens entering the local waters, which could be a health hazard. This increased human activity could disturb wildlife, particularly elk, and eventually lead to population declines.

The wilderness designation, and its projected resultant visitor use increases could lead to crowding in parts of the area, which would decrease its values for solitude and wilderness enjoyment.

Those physical use activities restricted by the wilderness designation (timber and mineral production and motorized recreation) would be adversely affected by the loss to their usable resource base. Such losses would apply only to the 9,660 contiguous acres, since the existing primitive area is already restricted from such uses.

The time, effort, and thus costs required to administer livestock grazing allotments and maintain rangeland improvements on the 9,660 contiguous acres could increase as a result of wilderness designation.

If the private land inholding were acquired without the owners consent, it could cause an adverse impact to local social conditions.

Short Term Use vs Long Term Productivity

If the proposed action were implemented, some short and long-term impacts and resource tradeoffs would occur. The use of some resources would be foregone in order to preserve the integrity of others.

In the short term and in the long term, visitor use is projected to increase. This increased use could lead to increases in vegetation trampling, erosion, and health hazards due to fecal pathogens in the water supply. The losses in opportunities for soltude and losses in wildlife populations would be short and long-term impacts.

The losses (on the 9,660 acres of contiguous lands only) in some resource uses (timber, minerals, ORVs) would be short and long-term impacts, as would the increases in livestock grazing management costs.

Overall, the resource tradeoffs (on the 9,660 acres of contiguous lands) would involve foregoing the use of some resources (timber, minerals, ORVs) in order to enhance the use of other resources (wilderness character and primitive recreation and scenic values).

Irreversible/Irretrievable Commitment of Resources

There would be no irreversible or irretrievable committments of resources under this alternative.

SUPPORT DATA

LIST OF CONTRIBUTORS

Title	Name	Degree and School	Experience (Years)	Sections for Which Responsible
Team Leader	Lance Nimmo	BS Forestry University of Montana	8	All
Range Conservationist	John Denker	BS Range Science Colorado State University	5	Livestock Grazing
Economist	Lyle Johnson	BS Agricultural Economics Utah State University MS Agricultural Economics Utah State University	4	Social Conditions, Economics
Wildlife Biologist	Bruce Baker	BS Wildlife Science Texas A&M University Some Graduate School	3	Terrestrial Wildlife
Fisheries Biologist	Jeff Cameron	BA Biological Science California State University at Sacramento Some Graduate School Fisheries/Entomology	3	Aquatic Wildlife
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District Archeologist	Douglas Scott	Phd Anthropology University of Colorado	4	Cultural Resources
Soil Scientist	William Ypsilantis	BS Forest Management Michigan Technological University MS Forest/Soils University of Idaho	7	Soils, Minerals, Air Quality
Hydrologist	Dennis Murphy	BS Forest/Watershed Management Utah State University	1½	Hydrology, Climate
Botanist	Jim Ratzloff	BA Biology/Botany Metropolitan State College, Denver AA Life Science Chaffee Junior College	3	Vegetation, T & E Plants
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Writer/Editor	Steven R. Till	BA Technical Journalism Colorado State University	3	All
Forester	Cynthia Szarzynski	BS, MS Forestry Southern Illinois University	1	Forestry

LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS TO WHOM COPIES OF THE ENVIRONMENTAL IMPACT STATEMENT WERE SENT

Federal Agencies

- Advisory Council on Historic Preservation
- Department of Agriculture
  - Forest Service
  - Soil Conservation Service
- Department of Energy
- Department of the Interior
  - U.S. Fish and Wildlife Service
  - Water and Power Resource Service
  - Heritage Conservation and Recreation Service
  - Geological Survey
  - Bureau of Mines
  - National Park Service
- Environmental Protection Agency

State Agencies.

- Governor's Clearing House--Colorado

Local Agencies

- County Commissioners
  - Gunnison County
  - Hinsdale County
  - San Juan County
  - Saguache County
  - Montrose County

Other Organizations and Individuals

- Sierra Club
- Colorado Open Space Council
- Izaak Walton League
- The Wildlife Society
- Colorado Cattlemen's Association
- Colorado Wool Grower's Association
- Audubon Society
- Natural Resources Defense Council
- Society for Range Management

Wilderness Society
Rocky Mountain Center on Environment
Trout Unlimited
Colorado Historical Society
Ada County Fish and Game League
Nevada Outdoor Recreation Association
Oregon Environmental Council
National Council of Public Land Users
All Livestock Grazing Permittees in the EIS Area
Various Individuals Who Have Requested Copies of
All BLM Environmental Documents

INDEX--POWDERHORN WILDERNESS EIS

Affected Environment 17

Air Quality
    Description 17
    Impacts 64

Alternatives Considered 7

    Proposed Action
        Description 7
        Impacts 65

    Designation of the Primitive Area
        Description 10
        Impacts 77

    Use Alternative
        Description 11
        Impacts 79

    No Action
        Description 12
        Impacts 80

    Designation of All Lands with Wilderness Character
        Description 12
        Impacts 82

Aquatic Wildlife
    Description 34
    Impacts 67, 77, 79, 80, 82

Big Game Hunting (see Recreation)

BLM Planning System (see Purpose and Need)

Cultural Resources
    Description 39
    Impacts 69, 77, 79, 80, 82

Economics
    Description 61
    Impacts 74, 77, 79, 80, 86

Energy Requirements and Conservation Potential 64

Environmental Consequences 63

Erosion (see Soils)

Federal Land Policy and Management Act (FLPMA) 3, 7, 10, 12

Forestry Resources
    Description 46
    Impacts 70, 77, 79, 80, 83

Forest Service (see Interrelationships)

Geology and Minerals
    Description 22
    Impacts 64, 65, 77, 79, 80, 82

Historic Resources
    Description 41
    Impacts 69, 77, 79, 80, 82

Impact Summary 14

Interrelationships 13

Livestock Grazing
    Description 37
    Impacts 69, 77, 79, 80, 82

Minerals (see Geology and Minerals)

Private Inholdings 9, 11, 13

Purpose and Need 1

Recreation
    Description 54
    Impacts 71, 77, 79, 80, 84

Social Conditions
    Description 62
    Impacts 75, 77, 79, 80, 86

Soils
    Description 25
    Impacts 65, 77, 79, 80, 82

State of Colorado (see Interrelationships)

Terrestrial Wildlife
    Description 33
    Impacts 67, 77, 79, 80, 82

Topography
    Description 17
    Impacts 64

Vegetation
    Description 30
    Impacts 67, 77, 79, 80, 82

Visual Resources
    Description 43
    Impacts 64, 77, 79, 80

Water Resources
    Description 27
    Impacts 66, 77, 79, 80, 82

Wilderness Act 1, 7, 10, 12

Wilderness Values
    Description 57
    Impacts 74, 77, 79, 80, 85

Wildlife (see Terrestrial or Aquatic Wildlife)

GLOSSARY OF TERMS

CONTIGUOUS: lands or legal subdivisions having a common boundary, lands having only a common corner are not contiguous.

INSTANT STUDY AREA: one of the primitive or natural areas formally identified prior to November 1, 1975.

MULTIPLE USE: "...the management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people, making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions, the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output." (Section 103, Federal Land Policy Management Act of 1976)

OFF ROAD VEHICLE (ORV): any motorized vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other terrain.

OUTSTANDING: 1. standing out among others of its kind; conspicuous; prominent. 2. superior to others of its kind, distinguished, excellent.

PRIMITIVE AND UNCONFINED RECREATION: nonmotorized and nondeveloped types of outdoor recreational activities.

ROAD: a vehicle route which has been improved and maintained by mechanical means to insure relatively regular and continuous use.

ROADLESS: refers to the absence of roads which have been improved and maintained by mechanical means to insure relatively regular and continuous use. A way maintained solely by the passage of vehicles does not constitute a road.

SOLITUDE: 1. the state of being alone or remote from habitations, isolation. 2. a lonely, unfrequented, or secluded place.

WAY: a vehicle route which has not been improved and maintained by mechanical means to insure relatively regular and continuous use.

WILDERNESS: the definition contained in Section 2(c) of the Wilderness Act of 1964 (78 Stat. 891).

WILDERNESS AREA: an area formally designated by Congress as part of the National Wilderness Preservation System.

APPENDIX S-1

GENERAL SOIL PROPERTIES--POWDERHORN AREA

Series	Slope Percent	Elevation Feet	Water Erosion Susceptibility	Wind Erodibility Group	Limitations for Paths and Trails
Alluvial Land	0- 5	-	-	8	Slight-Moderate: LS
Alluvial Land, Wet	0- 5	-	-	8	Severe: W, LS
Carbol	15-60	9,000-10,000	Moderate	8	Moderate-Severe: SL
Duffson	5-40	7,500- 9,500	Moderate-High	6	Slight-Severe: SL
Evanston	5-20	8,000-10,000	Moderate	4	Slight-Moderate: SL, D
Fola	1- 8	7,800- 8,500	Slight	8	Severe: SS
Gas Creek	0- 5	7,800- 8,500	Slight	8	Severe: W
Hopkins	5-45	7,700- 9,000	Moderate-High	8	Moderate-Severe: SS, SL
Meredith	8-50	11,000-12,600	High	8	Severe: LS, SL
Mord	5-30	9,000-10,000	Slight-Moderate	6	Slight-Severe: SL
Nutras	10-50	10,000-11,500	Moderate	8	Severe: LS
Parlin	5-45	7,700- 9,000	Moderate-High	8	Moderate-Severe: SS, SL
Passav	5-30	8,000- 9,500	Moderate-High	6	Slight-Severe: SL
Posant	10-60	8,000- 9,000	Moderate-High	6	Moderate-Severe: SS, SL
Ruby	5-40	9,000-10,000	Moderate-High	5	Moderate-Severe: SS, SL
Sapinero	10-50	9,500-10,000	Moderate-High	3	Moderate-Severe: SS, SL
Shule	10-50	9,500-10,500	Moderate-High	6	Slight-Severe: SL
Spring Creek	5-40	7,500- 9,500	Moderate-High	6	Slight-Severe: SL
Sunshine	5-35	9,000-10,000	Moderate-High	8	Moderate-Severe: LS, SL
Tolvar	10-50	8,500-10,000	Moderate-High	8	Moderate-Severe: SS, SL
Vinta	10-50	8,500-10,000	Moderate-High	3	Slight-Severe: SL
Vulcan	10-35	8,500-10,000	Moderate-High	8	Moderate-Severe: SS, SL
Wetterhorn	10-55	9,500-11,000	Moderate-High	8	Moderate-Severe: SS, LS, SL
Woodhall	5-50	8,500-10,000	Moderate-High	8	Slight-Severe: SS, SL
Woosley	10-60	9,000-10,000	Moderate-High	8	Moderate-Severe: LS, SL
Youman	5-30	9,000-10,500	Moderate-High	6	Slight-Severe: SL

Limiting factors which may affect the construction and maintenance of paths and trails are indicated. The Limitations do not imply that paths and trails cannot be consturcted on the corresponding soils.
LS = large stones; SS = small stones; SL = slopes; W = wetness, ponding; D = dusty

APPENDIX RE-1

WILDERNESS INTENSIVE INVENTORY

Unit No. CO-030-089
Powderhorn ISA

1. SIZE

Acreage Breakdown:

BLM:	50,140 acres
Private:	920 acres

Private and State land inholdings are not calculated in the acreage being evaluated in this inventory, nor are they inventoried for wilderness characteristics.

The unit consists of 50,140 acres of public land of which 40,400 acres consist of the Powderhorn Primitive Area (Instant Study Area).

A. Location

This unit is located in Gunnison and Hinsdale Counties approximately 7 miles northeast of Lake City. It is contiguous with the 31,990-acre U.S. Forest Service RARE II Area No. 218 which has been recommended for further study as wilderness by the Forest Service.

B. Initial Inventory Unit Boundaries

Because this unit is contained within a Special Project Area (Gunnison Basin Range Environmental Statement), an Intensive Wilderness Inventory was conducted rather than an Initial Wilderness Inventory. The unit's boundaries are delineated in the following section.

C. Intensive Inventory Unit Boundaries

The intensive inventory unit boundaries have not been altered during the intensive inventory. The southern boundary is adjacent to the Gunnison National Forest RARE II Area No. 218 (Cannibal Plateau, 31,990 acres) proposed by the Forest Service for further study as wilderness. The eastern boundary consists of the boundary between non-public and public lands or those areas deemed not be contain wilderness characteristics or the edge of the disturbed area along Ten Mile Springs Road. The northern boundary primarily excludes those lands found not to contain wilderness characteristics. The western boundary consists of the boundary between non-public and public lands or those lands found not to contain wilderness characteristics.

D. Ownership

There are three areas within CO-030-089 where private inholdings are found. In the northwestern portion of the unit, 600 acres of non-public lands are found in a random location. Within one mile of the Powderhorn Lakes is a 230-acre private inholding. South of Buck Creek and north of Fourth of July Creek is a 40-acre parcel of private land. All other lands are public lands administered by the Bureau of Land Management.

a. Leases: The area is leased to cattle and sheep grazing.

b. Mining Claims: There are no known valid mining claims in the unit.

Unit CO-030-089 includes all of the following sections in (see map):

T. 46N., R. 2W., Sections 20, 29 and 32;
T. 45N., R. 2W., Sections 5, 7, 8, 9, 10, 15, 16, 17, 18, 19, 20, 21, 22, 26, 27, 28, 29, 30, 31, 32, 33, 34 and 35;
T. 45N., R. 3W., Sections 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35 and 36;
T. 44N., R. 2W., Sections 2, 3, 4, 9, 10 and 16.

The unit includes a portion of:

T. 46N., R. 2W., Sections 17, 19, 21, 28, 30, 31 and 33;
T. 46N., R. 3W., Sections 25, 31, 32 and 33;
T. 45N., R. 2W., Sections 4, 6, 11, 14, 21, 23 and 25;
T. 45N., R. 3W., Sections 2, 3, 4, 5, 7, 21 and 22;
T. 46N., R. 4W., Section 36;
T. 45N., R. 4W., Section 1;
T. 44N., R. 2W., Sections 1, 11, 12, 14 and 15.

E. Summary of Size Criteria

The unit consists of 50,140 acres of public land adjacent to RARE II Area No. 218 proposed by the Forest Service for further wilderness study. A total of 920 acres of private lands are found within this unit. Of the 50,140 acres of public lands, 40,480 acres make up the present Powderhorn Primitive Area.

Does the area have at least 5,000 acres of contiguous land or is it of sufficient size to make practicable its preservation and use in an unimpaired condition?

[✓ YES] NO (circle One)

SIGNATURE: Jon Wesley Sering DATE: 12/3/79

2. NATURALNESS

A. Topography and Vegetation

The Powderhorn is characterized by relatively level alpine plateaus deeply dissected by glacial valleys and cirque basins. The elevation ranges from 12,644 feet on Calf Creek Plateau at the southern end to approximately 8,600 feet along Powderhorn Creek at the northern end. Vegetation generally follows the elevation with alpine tundra, spruce/fir forests, ponderosa pine and wide-open parks, and sagebrush/grassland being present. The area also contains several small ponds or lakes in the western half of the unit and includes meadow-type vegetation around these water bodies.

B. Imprints of Man

The imprints of man within the unit are generally widely scattered and have a limited impact due to topographic and vegetative screening. In addition, the relatively large size of the unit tends to absorb man's activities. Within the unit are four deteriorating log cabins of some historic value, approximately 12 miles of vehicle ways which are naturally revegetating, and range projects such as fences and stock ponds. Several miles of hiking and horseback riding trails exist but are completely compatible with the wilderness concept. The imprints of man within the unit were determined to be substantially unnoticeable with the area primarily affected by the forces of nature.

C. Summary of Naturalness Criteria

Unit CO-030-089, which focuses on the area's relatively unique alpine and subalpine environment, retains its primeval character and influence. The area contains lakes, large meadows, a heavy spruce/fir forest and extensive examples of alpine glaciation. There are no significant imprints of man within the unit.

Does the area or island generally appear to have been affected primarily by the forces of nature with the imprint of man's work substantially unnoticeable?

[✓ YES] NO (circle one)

SIGNATURE: ______________ DATE: 12/3/79

3. OUTSTANDING OPPORTUNITIES FOR SOLITUDE OR A PRIMITIVE AND UNCONFINED RECREATION ANALYSIS

A. SOLITUDE

Topography, vegetation and size all contribute to the unit's outstanding opportunities for solitude.

The relatively large size of the unit (50,140 acres) with its rugged and diverse terrain characterized by steep-sided drainages radiating outward from Calf Creek Plateau, provide numerous locations where opportunities for solitude are present. The dense stands of spruce, fir and aspen found along these drainages and on the ridges further enhance solitude opportunities through feelings of seclusion and intimacy. The higher elevations, within the alpine tundra environment of the Calf Creek Plateau, offer sweeping vistas of the surrounding mountains and adjacent proposed or designated wilderness, projecting a feeling of vastness which enhances solitude. Due to these combined factors, the area contains outstanding opportunities for solitude.

Summary of Solitude Criteria

Does the area have outstanding opportunities for solitude?

[✓ YES] NO (circle one)

SIGNATURE: DATE: 12/3/79

Unit No. CO-030-089
Powderhorn ISA

3. B. OUTSTANDING OPPORTUNITY FOR A PRIMITIVE AND UNCONFINED RECREATION

The block-like configuration and relatively large size of the unit allow for unconfined freedom of movement of recreationists, particularly over the alpine tundra portions of the area. These areas provide outstanding opportunities for hiking or horseback riding during the summer and Fall and cross-country skiing or snowshoeing during the winter and Spring periods. Lakes in the area, and the forks of Powderhorn Creek, provide fishing opportunities as well as scenic locations for camping. The varied wildlife of the area, including beaver, ptarmigan, bobcat, mountain lion and a sizable elk herd, provide ample viewing and hunting possibilities. These factors all contribute to provide outstanding opportunities for a primitive and unconfined type of recreation.

Summary of Primitive and Unconfined Recreation Criteria

Does the area have outstanding opportunities for a primitive and unconfined type of recreation?

[✓ YES] NO (circle one)

SIGNATURE: ______ DATE: 12/3/79

Unit No. CO-030-089
Powderhorn ISA

4. SUPPLEMENTAL VALUES

Ecological

The upper portion of the Calf Creek Plateau and Cannibal Plateau are reported to be one of the largest expanses of relatively flat areas of alpine vegetation in the contiguous United States.

Geological

The area, which consists of San Juan volcanic rock type, has numerous examples of glacial geomorphology including moraines, rock glaciers, tarns and U-shaped valleys.

Historical

The area contains some old cabin remnants and may be the general location of Alferd Packer's cannibalistic "feast" of five men in the winter of 1874.

Scenic

The area includes a relatively large and unique 360-degree visibility of surrounding wildlands: Weminuche Wilderness, La Garita Wilderness, Cannibal Plateau, Red Cloud Peak area, Uncompahgre proposed wilderness, West Elk Wilderness, Maroon Bells/Snowmass Wilderness, and the Grand Mesa.

Educational/Scientific

The unit is high in educational and scientific values due to the wide variety of vegetative types and diverse wildlife.

Summary of Supplemental Values Criteria

Does the area contain ecological, geological or other features of scientific, educational, scenic or historic value?

[✓ YES] NO (circle one)

SIGNATURE: DATE: 12/3/79

Unit No. CO-030-089
Powderhorn ISA

5. POSSIBILITY OF CERTAIN AREAS RETURNING TO A NATURAL CONDITION

No portions of the unit require active rehabilitation.

Summary

If the area or island were to become a wilderness area, could the imprint of man's work be reduced by either natural processes or by hand labor to a level judged to be substantially unnoticeable?

YES NO (~~circle one~~) N/A

SIGNATURE: ____________ DATE: 12/3/79

Unit No. CO-030-089
Powderhorn ISA

6. RATIONALE FOR/FOR NOT RECOMMENDING AS A W.S.A.:

Unit CO-030-089 meets all the criteria required of a Wilderness Study Area. The unit is primarily natural in character and its large size (50,140 acres) and block-like configuration allow for its management in an unimpaired condition. Its rugged topography and diverse vegetation provide outstanding opportunities for both solitude and primitive and unconfined recreation. In addition, the unique alpine tundra areas and the high scenic quality of the area add supplemental values.

WILDERNESS INVENTORY
WILDERNESS SUMMARY SHEET

I. LOCATION

Inventory unit No. (area or island, grouping of areas or islands): CO-030-059

Areas/Island name: POWDERHORN ISA

District: Montrose State: CO

II. SUMMARY:

A. Results of wilderness characteristics analysis.

1. Does the area or island appear to be natural? ✓ yes ___ no
2. Does the area or island offer outstanding opportunities for solitude or a primitive and unconfined type recreation? ✓ yes ___ no
3. Does the area meet any of the size requirements? ✓ yes ___ no
4. Does the area or island have supplemental values? ✓ yes ___ no

B. Resulting map.
Attach a map showing inventory unit, roads, area with possibility of returning to a natural state, recommended boundary of wilderness study area (WSA).

III. RECOMMENDATION

Check one:
✓ Area or island should be approved as a WSA.
___ Area or island does not qualify for wilderness study.
___ A portion of the area(s) or island(s) should be approved as a WSA for further study and reported to the President. The restrictions imposed by Section 603 will no longer apply (reference to map) on the remainder of the area.

IV. APPROVAL

A. Area Manager: Date: 12/3/79

B. District Manager: Date: 12/6/79

C. State Director: Date: 12/14/79

APPENDIX SE-1

Derivation of Recreation Values

Recreation values for the existing Powderhorn Primitive Area were derived using a travel cost model to determine users willingness to pay. The base data for the model was obtained from the visitor registers located at the Indian Creek and Ten Mile Springs Trail Head during 1978. These gave the origin of the party, the number of people in the party, and the length of stay in the area.

Because of the national attraction of western Colorado for outdoor recreation it was found that visitors were spending only a part of their vacation in the primitive area. To compensate for this it was assumed that visitors from out of state spend 25 percent of their available time in Colorado visiting the primitive area. Accordingly 25 percent of the travel from these origins were used in the travel cost model.

The methodology used followed that outlined in the "Draft Planning Area Analysis for Wilderness" by John Loomis, dated October 30, 1978, a summary of which follows. The first step was to estimate a demand for the experience curve (first stage demand curve). Using the round trip travel costs as the independent variable and the number of trips as the dependent variable a regression was run to establish the function that best fit the register data. The resulting equation was:

$$y = 5.71 - 0.02x$$

The next step was to develop a demand for the resource itself curve. To do this it is necessary to develop a willingness to pay schedule. Taking the above equation the travel cost (x) for each origin was put in to estimate the number of trips at a zero additional fee. Then for each origin a hypothetical fee increasing in $20.00 increments was added to the travel cost until the estimated number of trips from each origin became zero. Then the results for all the origins was summed to get the total estimated trips at each price. Using this schedule a second regression was run using the hypothetical fee as the independent variable and the number of trips as the dependent variable. The resulting equation for this study was:

$$y = 105.06 - 0.74x$$

Solving this equation for x:

$$x = 223.53 - 2.13y$$

is obtained. Taking the integral of this equation from zero to the horizontal intercept an estimate of the willingness to pay (consumer surplus), or benefits derived by existing users was found to be $23,460. Dividing by the number of visitor days (1,270) resulted in the consumer surplus per visitor day of $18.47. It was this figure that was used to estimate the value of increased use of the area for the various alternatives in the EIS.

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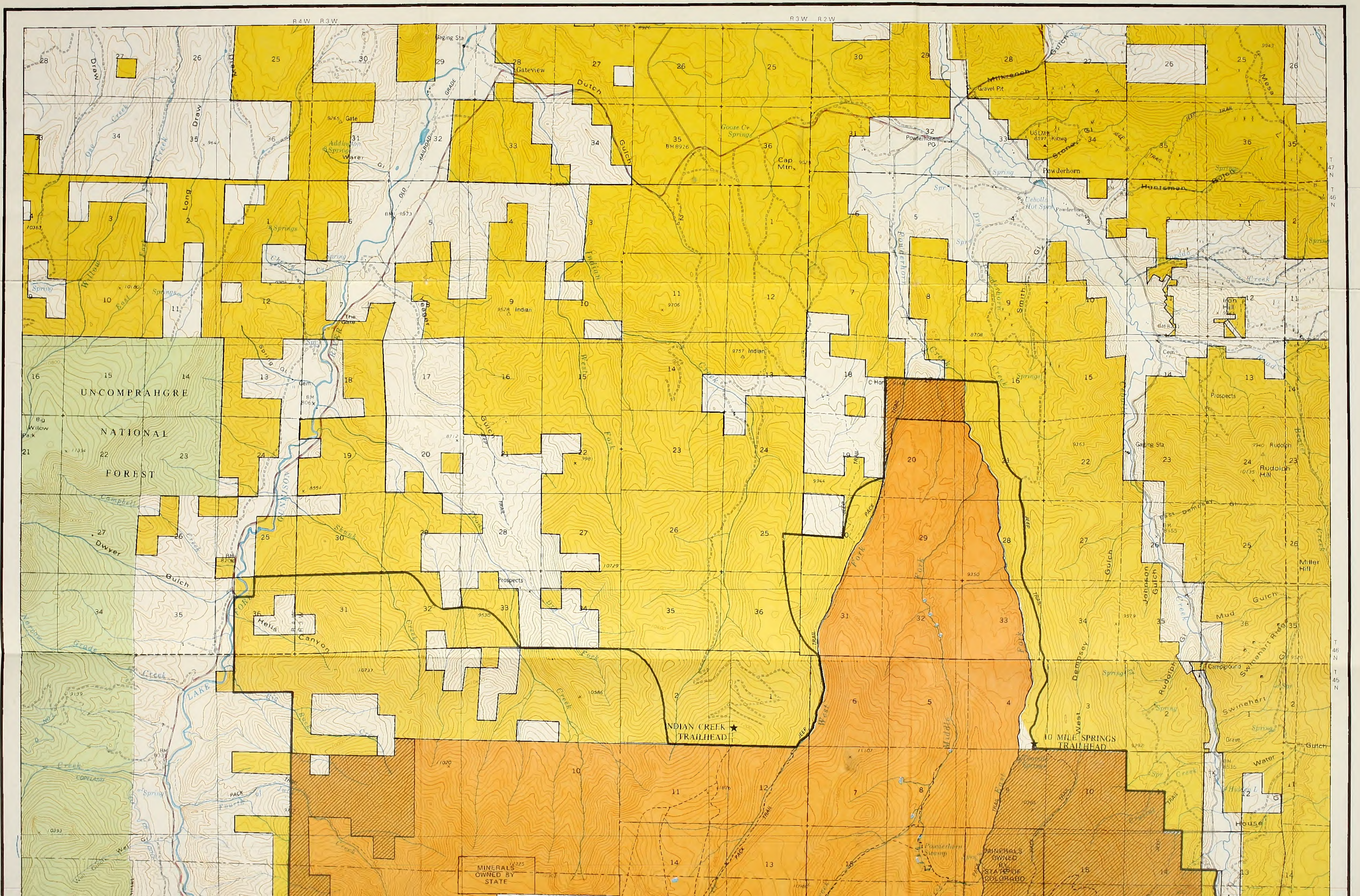
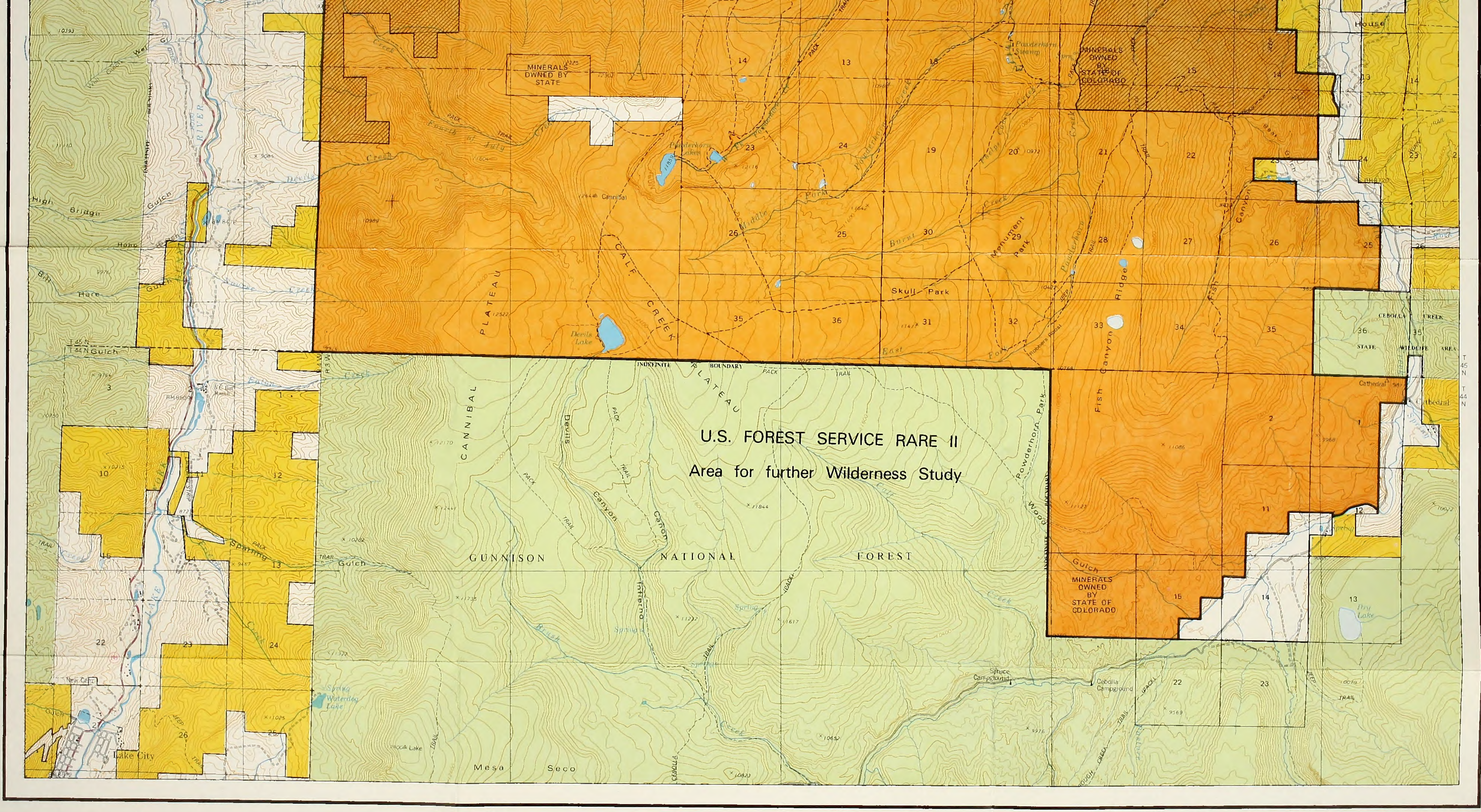
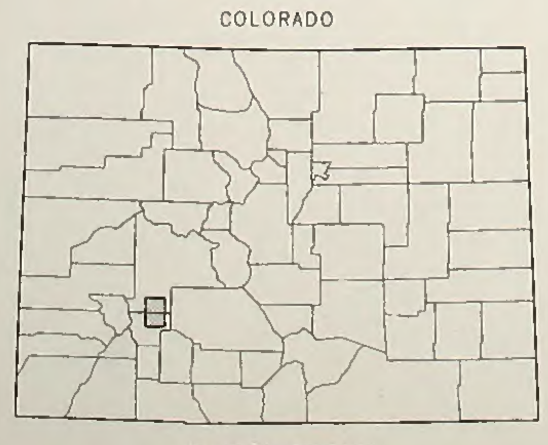
POWDERHORN WILDERNESS STUDY AREA







LOCATION DIAGRAM

APPROXIMATE MEAN
DECLINATION, 1978

SCALE 1:50 000

CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

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LEGEND

TRAIL	- - - - - -
TRAILHEAD	★
PUBLIC LAND	🟨
NATIONAL FOREST	🟩
POWDERHORN PRIMITIVE AREA	🟧
AREAS INCLUDED WITH PRIMITIVE AREA IN MFP II RECOMMENDATION	▨
BOUNDARY FOR ALL LANDS WITH WILDERNESS CHARACTERISTICS	━━━
WILDERNESS RECOMMENDATIONS	🟧▨